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THE PLACE OF MEDICINE TODAY*

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As an introduction to this more or less sermon-like or one might almost say exhortation-like talk, I would like to read an editorial which I wrote at the request of the editor of the Indiana State Medical Journal, soon after my election as President-elect of the American Medical Association and which was published in that Journal in September, 1940. I wish to read this in order that I may present what I then thought was the place of medicine and in order that I may now draw some general deductions and some deductions in relation to the place of medicine today. If in it the non-medical public finds any truths or lessons which they can apply to themselves I feel certain that medicine will have no jealousy about their utilizing them.

"The tradition of complacency is one of the most difficult ones to break down. When it has been bred and established in the minds of citizens of a country that its position as to defense is impregnable, that its history of past achievements in wars is unblemished, that its financial resources are unlimited, that its population is one of the greatest in the world, that its manufacturing productiveness is at the world's highest level, that its natural resources are the equal or superior of most countries in the world, and finally that it is separated from all large and powerful countries by two large oceans, is it to be wondered at that complacency pervades the country? It is now trite to remind the American medical public of the penalties which have been paid by European countries for such a complacency. It is trite indeed to speak of the sad effects upon some of the European countries of political division, political bitterness and political selfishness. It is trite indeed to call attention to the fact that of what good are working hours, of what good are wage levels, what satisfaction is there in various labor arrangements if the country has its standard of living lowered by economic competition, or its labor dominated by foreign powers. One opens himself always to the possible criticism of being an alarmist by making some of the previous statements. Were they applied to the general public, this might possibly be said of the writer. When they are confined, however, to such a relatively small, understanding, and well organized group as is medicine, this criticism should not hold. Medicine can always work a few extra and longer hours. No doctor has ever felt himself a candidate for a union or for limitation of his hours. Medicine can always give a little more of its time. Medicine has made sacrifices from its very beginning and will if there be an emergency, as there appears to be, make a few more sacrifices. Medicine has in the past few years been subjected to many unjust and undeserved criticisms. If it organizes itself for the immediate emergency as it has always met emergencies in the past, it will emerge even more appreciated than it has been in the past. It is distinctly possible that the times which are coming may well serve as a boon in that the

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public may come to realize by our example what medicine can do and has done."

This editorial is not quoted with any idea of, I told you so and see what a prophet I am, attitude. This is an attitude with which I have neither patience nor interest. Such an attitude, however common it may be in some of our public utterances, is really not concerned with the good of the country and the security of its future but rather with the good of the prophet and the enhancement of his individual future. I quote my editorial of that date quite impersonally and with the sole purpose of calling attention to the penalties which we are now so painfully paying for these complacencies.

Is it necessary in illustrating this complacency to recall the bitterness with which even the mention of an American Expeditionary Force was greeted a short time ago (how we wish we had it ready now) and yet the phrase, "too late" or "too little", if not on the tongue is in the mind of almost everyone today who is honest with himself? How the miles have shortened in our Western and Eastern oceans with vessels being sunk almost daily on our figurative Eastern and Western front doorstep. Were I to search my mind to its utmost capacity for an outstanding and convincing example of what I would consider a soul stirring reminder of the penalty of complacency, I could not think of one which would even remotely rival that of the Pearl Harbor complacency, costing as it did lives, suffering and naval equality in the Pacific with its incalculable relationship to the present Japanese successes, their ultimate effect upon the prolongation of the war and the increased costs in life and suffering for its successful completion. There is no real, convincing evidence even now that the shock to our complacency by some of these events has produced the lasting effects upon us which it should. We are still having labor bickerings, strikes, shutdowns in the country, and personality conflicts, ideologic disagreements and political contests in Washington, all of which are based upon the assumption that we are going to have a country which we still rule and not one which some dictator dominates.

Note in this editorial in 1940 the suggestion that labor, or for that matter I might well have said, business or political reforms are of no value unless the country exists upon somewhere near the same basis as it now exists. Add to these, because they represent a parallel futile situation, the question of social reforms on the part of our Government in Washington, and let us ask ourselves and our fellow citizens in labor, capital and politics—and whatever side we take in these contentions, if we lose this war all contentions dissolve and we come very close together again as fellow sufferers, that we realize how stupid were our disagreements. Let us ask our fellow citizens I say, "When and how do we overcome our complacency to the degree that we realize the time has come for a real singleness of purpose that places one thing so far above everything else that others do not even deserve consideration?" That is the winning of this war. How many shocks do we need to make us really aware of our dangers and willing to face them frankly? How much nearer do we need the war to our front porch than off the port of New York and the coast of Florida before we become aware of the fact that an amateur boxer in the ring with the present heavyweight champion would make a sorry showing indeed? How long must we go on blind to the fact that German efficiency is paying high dividends and that it is based upon no racial superiority, upon no mysterious reasons but upon greater effectiveness as the result of centralized authority, upon, if need be, compelled unity of purpose and, most importantly, upon a realization that it is for them a life or death struggle—a possibility which this nation is as yet unwilling even remotely to consider realistically?

We tend constantly to console ourselves with a philosophy which is an exceedingly soothing and dangerous one expressed by, "Wait until we get going; wait until our airplane production gets rolling; wait until our munitions production gets under way; wait until our Army gets trained; wait un-

til our two ocean Navy is in action." This is all true, thanks to what we must now admit was stupidly dumb complacency. We do have to wait. There is no way around that now, but we do not have to wait indefinitely to get this country on the common footing upon which it will have to get if we have many more catastrophies. The country has shown itself ready to stand behind shutdowns on the production of automobiles. It is ready to cooperate in tire shortages and will, if it can shake off its complacency, unhesitatingly support any compulsory measure which prevents interference with war production either on the part of labor, capital or politics. While I am not qualified, nor am I concerned with doing it, to decide as to the causes, I am certainly competent to discern that this country has in the business of production, in the political conduct of government and in the philosophy of social reform so cultivated the habit of arguing, bickering, name calling and smearing, eventuating into blame placing investigations that it is impossible, I believe, for even the investigators and principals themselves to know who is wrong and how it can be corrected much less the poor, confused public who really pay the bills and any other incidental penalties.

I have recently said that personality and political differences are attitudes which have no place in a nation in the war straits in which we find ourselves. They are, for me, luxuries which are to be reserved for times of peace only. They serve no useful purpose except to bring about division, delay and discord and thus promote the cause of our enemies, a fact which should be forcibly called to the attention of those who either thoughtlessly or emotionally employ them.

If any of my listeners or readers interpret into these remarks bias, prejudice or pressure against labor, capital, social-economists, political forces or government, I shall be sorry. It is not my purpose in them to be in any way destructively critical but to promote nationally the idea that if we are to cope successfully with demonstratedly efficient and effective opponents we must be capable of taking advantage of their experiences. Even if all of the glowing and complacently accepted virtues spoken of in the quoted editorial with which I opened this talk were true of this country, and we now have had revealed to us that many of them are not, we would still not be able to present to two such efficient and prepared war machines as Germany and Japan possess, the advantages which go with a country divided politically, socially, economically and psychically. I wish particularly to stress the word psychically. If I, as a doctor, were asked to select the single thing from which this country suffers the most today but which is, by a better attitude of unselfish and patriotic tolerance, still capable of correction, it would be that it is psychically divided. I am not concerned with how it came about. I imply no criticism in any way to any individuals or groups in that respect. I only know that there is lacking in the country the same psychic unity that was present in the last war and without which there can be no completely satisfying accomplishment in this war.

I am prompted to speak so openly about a subject as delicate as is this one particularly at this time, because my travels to all parts of the country and my contacts with all types of people in and out of medicine convince me of the truth of this statement. I am prompted to call attention to the disadvantages of national psychic disunity with the hope that, by recognizing its existence and harm and at least until the country's future appears more secure it will be possible by more unselfish tolerance of conflicting viewpoints to accomplish its correction without waiting for a near national catastrophe to bring it about and at the price which France paid for such disunity.

It is to be noted that in the quotation of this 1940 editorial it was suggested in the closing paragraph that medicine organize itself for the emergency (then apparent) and that by doing so it might well serve as a worthy example to the non-medical public in terms of forehandedness, willingness

to make sacrifices and ability to rise above group resentments.

The forethought of the American Medical Association's National Committee on Medical Preparedness, which accepted the idea of a procurement and assignment service to provide medical personnel for the armed forces and to prevent civilian depletion of doctors and recommended it to the President, the Secretaries of War and the Navy and the Surgeons General of the Army, the Navy and the Public Health Service, together with the willing and prompt cooperation of the President in appointing such an agency, is evidence of the fact that American medicine profited by the lessons of the last war and was thinking well ahead concerning the then evident impending war. The fact that there are already 15,000 doctors in the service, the fact that following the recent appeal for more doctors 25,000 have volunteered to the Procurement and Assignment Service in the last two months, together with the fact that of the 65,000 doctors under 45 who by terms of the recent change in the law are available for the draft, 86 per cent are physically fit and of the single ones 63 per cent and of the married ones 48 per cent have signified their willingness to serve—is evidence of the willingness of American medicine to make whatever sacrifice is necessary for the country's need.

Following the establishment of the Committee for the Procurement and Assignment of Medical, Dental and Veterinary Personnel, with its advisory committees of all of the diverse interests in medicine, the Adjutant General's office by order of the Secretary of War on January 21, 1942, issued an order that following that date all applications to Corps Area and Department Commanders for appointments in the Medical, Dental and Veterinary Services in the Army of the United States should be forwarded to the Procurement and Assignment Service. A very similar order was made effective for the Navy, as follows: When a requisition for medical or dental personnel is received for the United States Navy medical department by the Procurement Service, the names of doctors and dentists available will be forwarded by the Procurement Service to the Navy Department, which agency will forward the necessary blanks to the applicant and forward to the Procurement and Assignment Service the names of those applicants who have been commissioned or assigned positions in the service concerned. It is obvious from the above plans accepted by the Army, Navy and other Federal agencies requiring medical personnel that the responsibility for the providing of medical, dental and veterinary personnel has been placed directly in the hands of medicine and its allied branches. This demonstrates how complete has been the trust of the Government in medicine to fulfill not only its obligations to the armed forces of the Government and its associated Federal agencies, but also its obligations to see that undue depletion does not occur and that proper medical, dental and veterinary attention is available for the civil population including hospitals, medical schools, industrial plants and many other projects requiring medical personnel. What the ultimate strength of the armed forces will be is impossible to estimate and state at the present time. One can only say that it will probably be of such ultimate size as to tax the complete resources of medical, dental and veterinary personnel of the country and still provide proper care for the civilian population.

There will shortly be sent out by the Procurement and Assignment Service a complete and final questionnaire, which should be filled out by every doctor in the country, by means of which the national roster of physicians, dentists and veterinarians will be brought up to date for employment by the Procurement and Assignment Service.

Because there is a very distinct tendency on the part of doctors to be resentful of, and negligent with, questionnaires, it should be plainly stated that this questionnaire is not primarily for the benefit of the Government. It is preeminently for the benefit of the doctor, aimed as it is by means of the information obtained from it to get him into the place he can best occupy. It is

striking evidence of the trust that is placed in him, on the part of the Government to be willing to let him do, without pressure, whatever he is best suited to do in this period of national need.

There has been established in each of the nine Corps Areas of the country a Corps Area Committee with a chairman, two physicians, two dentists, a veterinarian, a hospital representative and a representative of medical education. Since each Corps Area is made up of several states, there has been appointed in each state a state chairman with a dental representative. These state chairmen, with the committees they appoint, to meet the needs of their particular states will receive from the executive office of the Procurement and Assignment Service the names of those physicians, dentists and veterinarians who have volunteered their services as obtained and cleared through the information available in the national roster. Through the regional office these names will be forwarded to the state chairman, who, with his appointed committeemen, will certify them to the central office of the Procurement and Assignment Service in Washington as to their military availability, having in mind civilian, medical school, hospital and other essential needs.

From the above description one may say with pardonable pride that organized medicine represented by the American Medical Association since it instituted the procurement and assignment plan and paid for and set up the only complete roster of the physicians of the country has as well as any group in the country foreseen and accepted the probability of a national emergency; that it has foresightedly planned for its probable obligations to the armed forces and civilian population and has accepted them, and that it possesses perhaps as well as any group in the country that patriotic and psychic unity so necessary to the conduct of any war ordeal of the magnitude of this one.

If my wide contact with medical groups all over these United States is any criterion, there is no question concerning the place of medicine today. There will be no question of, can we get enough medical men to take care of the armed forces? Rather will it be, can we keep enough doctors, dentists and veterinarians from volunteering and joining the services so that the civilian population will be adequately cared for?

Assignment and not procurement will eventually be the real problem of this service. It is the purpose of the Procurement and Assignment to place a distinctive registered and numbered service button upon every doctor in the United States who has registered with the service. It is hoped by the Procurement and Assignment Service that the public will recognize in the wearer of one of these buttons a doctor who has registered with the Procurement and Assignment Service as willing to serve in whatever place and capacity he is thought suitable for. It may eventually be more trying for those who are required from the necessities of civilian care, hospital maintenance, medical school teaching, physical defect or age to remain at home than for those who go into the service. It is most important that the public recognize this button as a badge which signifies that the decision which places its wearer where he is, has been made by the Procurement and Assignment Agency, and not by the individual who wears it. It is to signify that although he may not be in uniform he has signified his willingness and that regardless of this he too serves.

TEN YEARS' EXPERIENCE TREATING MALARIA BY THE SHORT COURSE METHOD*

J. P. SANDERS, M. D.
SHREVEPORT

In treating any disease as chronic and universal as malaria, time is an important factor in evaluating the efficacy of any drug. For this reason I believe this paper may be of some value. It covers the number of patients treated for malaria during the entire period from 1930-1940 inclusive.

*Read before the Louisiana State Medical Society, Shreveport, Louisiana, April 21, 1941.

It covers a number of different antimalarial drugs.

In 1930 the work was started with quinidine because of an idiosyncrasy one patient had to quinine. It was found later that she was sensitive to most of the levorotary cinchona alkaloids, but not to the dextrorotary ones of which quinidine is the most common. Because the toxicity of quinidine was unknown single daily doses of 10 grains for four days were tried with good results.[1]

By 1931 I considered quinidine so good in the treatment of malaria that a comparison was carried out with quinine in the same dosage on alternate patients. The results showed quinidine to be at least equally as good as quinine.[2] The relapse rate was about 25 per cent in benign tertian and 40 per cent in estivo-autumnal infections.

In the meantime Dawson and Harms[3] did some work on the toxicity of quinidine in guinea pigs in comparison with quinine. They found quinidine about one-third more toxic than quinine. But it is now felt that quinidine is about as safe or possibly even safer in the human being than quinine. Differences in toxicity of two drugs between human beings and experimental animals occasionally occur.

In 1932 Sioli[4] first reported atabrine (atebrin) in the treatment of human malaria using only a five day treatment (4½ grains daily). The author of this paper was sent a few ampules to use experimentally. Collins,[5] in 1934, reported a series of cases treated in Batavia by a single 1 gram (15.5 grains) daily dose of quinine for three to four days. Hill and Olivarria[6] reported similar results with quinine in 1935.

By 1935 I[7] had accumulated a series of 1047 cases of malaria treated with quinidine alone. Until July, 1933, the treatment had consisted of 4 single daily doses of 10 grains. Then it was increased to five days with two doses (10 grains) the first two days, a total of 70 grains. A statistical study of those cases for 5 years disclosed the following results:

Cures—1 year, 74 per cent; 2 years, 78 per cent; 3 years, 68 per cent; 4 years, 86 per cent; combined, 75 per cent.

Of the 842 cases that could be followed for one, two, three and four years, 630 remained well, or 75 per cent. This percentage was confirmed a year later with a further study of another 302 cases treated with quinidine and another year of follow-ups. In that paper[8] I presented 81 cases treated with quinine, seven treated with hydroquinine, 48 treated with cinchonine and cinchonidine, seven treated with hydrocinchonine and hydrocinchonidine and 56 cases treated with atabrine. Thirty-seven per cent of the patients with atabrine relapsed which was comparable to quinine and quinidine. The other rare cinchona alkaloids, though a small series of each, confirmed previous reports of their efficacy in malaria.

During 1937, with the cooperation of 32 physicians[9] of Northwest Louisiana and the Charity Hospital of Shreveport, a large scale study and comparison of the two drugs, quinine and quinidine, was made. A total of 1138 cases were treated and the majority of them were followed for the remainder of the malaria season both clinically and by blood smear. Certain interesting facts were revealed from that study:

1. Ten to twenty grains of quinine daily are as effective as 30-40, or 60-90 grains daily.

2. That the five day course of quinine is as effective as the longer course, that is, 14 days with 10 grains two nights a week for the rest of the season.

3. Complications of pregnancy, surgical operations or wounds seemed to make little difference in the length of time required to bring the temperature to normal, all within 72 hours or less.

4. Quinidine had a relapse rate of 15 per cent in benign tertian and 13 per cent in estivo-autumnal while quinine had a relapse rate of 20 per cent in benign tertian and 30 per cent in estivo-autumnal.

5. Relapse rate for the season, both sexes and races, all ages, was 17 per cent.

In a subsequent paper Sanders and Dawson[10] reported a comparison of 10 and 20 grains daily of quinine sulfate on 46 cases with no significant differences. Relapse rate within a year was estimated between 25-45 per cent, which compares favorably with Hackett.[11]

In all this work blood smears have been taken on most of the patients. The two strains, benign tertian and malignant tertian or estivo-autumnal have been compared. But I have consistently carried the negative group, feeling that it represented patients who had malaria, though no parasites have been found. Though it is admitted there are some mistaken diagnoses, I feel that many patients are treated without demonstrable parasites in the peripheral blood and that some patients get well even though they are not treated. Out of 81 cases of the 1937 series showing positive blood smears at some time after treatment 40 per cent of benign tertian and 66 per cent of the estivo-autumnal did not relapse clincially during the season, though no further treatment was given. Blood smears are absolutely essential and should be done on every patient with malaria, especially since there are so many public health laboratories that will examine gratis for the physician. I doubt if we are justified in waiting for a positive blood smear before starting treatment. It has been my plan to start treatment as soon as the diagnosis is made.

Two main objects have evolved as I continued this study of malarial therapeutics: first, to determine the efficacy of quinidine in malaria and second, to determine the effectiveness of the short course of treatment. Since little work had been done on quinidine and none at all in this country, there was only slight competition. Sinton,[12] in 1930 working in India, had reported a few cases treated with quinidine and found it about equal to quinine. Physicians prescribed quinidine in 3 grain doses to cardiac patients with fibrillation, but were cautious not to use it in larger doses. Though quinidine got into the pharmacopeia because of its antimalarial value, this value had long been forgotten.

The second object of this study, the short course, has been easy to follow out. Doctors realized that the long course did not cure all the patients. Some relapsed while taking their 10 grains of quinine every night. While the short course may not be any better as a curative than the long course, it is much cheaper for the patient and far more agreeable. But many workers believe that the patient has to build up immunity to the disease and, if this is true, then the short course is preferable to the long, in that it allows a few parasites to remain in the body and develop immunizing substances in the blood. Some of this work tends to bear that out. Of those 81 cases that had parasites in the blood following treatment (1937 series) 16 benign tertian and 27 estivo-autumnal never had clinical manifestations during that season following the positive blood smears and some were found later to be blood smear negative.

Idiosyncrasy is about as common with quinidine as with quinine. I have had six instances among the 2215 patients treated. This observation bears out the ratio ordinarily expected with quinine, one to 300, to one to 500. The reaction varied from the very mild case of urticaria to a moderately severe one. No patient has been sensitive to both quinine and quinidine.

Women in all stages of pregnancy from the first to the last month tolerate quinidine well. I have never known of quinidine causing uterine contractions. Neither does it cause tinnitus. I am sure that textbooks stating that it does are mistaken, because I have questioned hundreds of patients and I have yet to have my first one to say that it does. It occasionally causes a slight syncope, which is relieved if the patient lies down for an hour. It probably does not cause amblyopia as quinine sometimes does. There is not a case of amblyopia on record from the administration of quinidine, though there are many from quinine. Dawson and confrères showed in 1937 that the quinine may make a dog go

blind in two days (lethal dose), quinidine causes little or no change in the dog's eye. Hematuria cases caused by quinine have all tolerated quinidine with no recurrence of the hemorrhage.

TOTAL CASES TREATED BY SHORT COURSE

	Atabrine	Quinine	Quinidine	Others	Total
1930	0	0	39		39
1931	0	61	65		126
1932	1	0	130		131
1933	29	0	502	9 C, 17 Cd	557
1934	9	0	311	3 Hq, 3 H	327
1935	16	20	302	13 C, 9 Cd, 4 Hd	364
1936	12	40	152		
1937	13	1124	361		1498
1938	14	118	93		225
1939	6	31	112	4 S	153
1940	8	55	148	3 S, 22 E	236
Total	108	1449	2215	87	3656

C—Cinchonine.
Cd—Cinchonidine.
S—Sulfanilamide and sulfapyridine.
E—Experimental drug.
Hq, H and Hd—Hydroquinine, hydrocinchonine and hydrocinchonidine.

In the accompanying table it will be noted that seven patients have been treated with sulfanilamide and sulfapyridine. Two patients did not respond readily and were put on quinidine. The minor cinchona alkaloids were about equal to quinine and quinidine in their reaction. Not enough patients were treated with any of these to draw definite conclusions. But of the 30 or more cinchona alkaloids most of them have antimalarial value. That is why a cinchona febrifuge, commonly used in chill tonics, cures malaria as well as it does. Cinchonine and cinchonidine probably have about the same value as quinine and probably should be used in about the same dosage.

ATABRINE TREATMENT

The 108 cases treated with atabrine have been distributed over a nine year period. There was no occasion for me to work on atabrine, especially since everybody else was doing it. But some very definite opinions have been formed by me. I believe it is of definite value in malaria, though not 100 per cent sure as was at first claimed. In my experience it has been effective in about 65-75 per cent of the cases and I consider it equal to quinine in its efficacy. It is slightly more toxic than quinine in some cases, probably due to the fact that it stays in the body so long—70 days in case of the rabbit, according to Dawson. It causes jaundice at times, probably due to some liver damage and has been known to cause mental symptoms. A course of treatment should not be repeated in less than two months. There is a strange similarity between all the antimalarial drugs in that they "cure" from 65-75 per cent of the cases.

DIFFICULT CASES OF MALARIA TO TREAT

One of the most difficult problems met with in malaria is the acute cerebral or comatose type. The patient's temperature may be 105-6° F. or it may be subnormal. A blood smear may reveal up to one-third or one-half of the red cells harboring parasites, some with as many as six or eight to the cell. One half the red cells involved is usually considered incompatible with life. Every cerebral malaria case is in extremis. The best procedure at present, I believe, is the immediate use of quinine hydrochloride (15-30 grains) given as an infusion, and repeated if necessary.

Hemorrhagic malaria or black water fever, swamp fever to native Louisianians, is another difficult type of malaria to treat. In most cases the malarial parasite cannot be found, for some unknown reason. Here is a type of case where diagnosis must be made clinically. Frequently, the patient has taken some quinine. One of my patients developed hematuria following quinidine. It seems at present that this may be a type of idiosyncrasy to the drug. In that case, it is advisable to switch to the other drug—quinine to quinidine or vice versa. In no instance has a patient who has been changed to the other drug failed to have his blood become free of parasites.

Chronic malaria is a different problem entirely. An acute disease develops into a chronic one. Just how chronic it may become no one seems to be sure about, but no doubt it lasts for four or five years. A malariologist reporting from Amsterdam two years ago described typical cases that

were on the Macedonia front in the other war, 21 or 22 years ago. These chronic cases develop a biologic balance between the plasmodia and the blood stream. Often physicians are unable to demonstrate the parasites in the blood. The body is never quite able to rid itself of all the organisms at any time. With lowered resistance an acute attack may come on at any time. I have found it the best practice, in chronic cases of malaria, to give a series (usually three) of short courses with 10-15 days' rest intervals between.

Complications of pregnancy or deafness I believe are safer treated with quinidine. In cases of an allergy toward either drug, then one of the others should be tried. No cases have been reported sensitive to atabrine. Patients who are nervous or have a neurotic tendency, or patients that relapse from atabrine in less than two months should be treated with the cinchonas. The quinine may cause amblyopia or even blindness, no work has been done showing that it made defective eyes worse.

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DISCUSSION

Dr. D. B. Barber (Alexandria): It is indeed a privilege and a pleasure to be asked to discuss the paper of Dr. Sanders. To know Dr. Sanders is to appreciate him. The many things that he does, he does well. He is constable of the town, he runs a big farm, he has an active country practice, and the most remarkable thing of it all to me is how a man who does so many things can accumulate the data and make such a detailed study, and become one of the authorities on malaria of not only Louisiana, of the South, but of the United States and of the world in the treatment of malaria,—that is a country doctor of Caspiana.

Dr. Sanders has brought out many interesting features. The incidence of malaria is more prevalent in the temperate and tropical seasons. In the subtropical area here where we live, where the land is flat, the soil maintains the moisture, holds it and keeps it from running off. The streams are sluggish; and all this offers an ideal breeding place for mosquitoes.

When we physicians treat malaria we should go further than curing the patient of this disease. We should do a little educational work. Teach him to screen his house, to keep his screens shut, which is most important. Many of us have seen houses that were screened but the screen doors were wide open. Teach him to destroy tin cans; to turn up the wash tub when finished washing.

The use of drugs began with the use of the bark of the cinchona tree, known as "Jesuits' bark" because of its introduction by the Jesuit priests. From this, we have isolated a large number of alkaloids, the principal of which is quinine, and its twin sister, quinidine. Both drugs have the same empirical formula, the same number of hydrogen-oxygen and carbon atoms, except that one is on the right hand, (dextro-rotary) which is quinine, and the other on the left, (levorotary) which is quinidine. All of the alkaloids of quinine seem to have an anti-malarial power. I wonder if there is not some substance which could be isolated from quinine, similar to the substance isolated from ergot, ergotamine, where a smaller dose is sufficient. I wonder if some day we won't be giving 1/32 of a grain of some form of quinine for the treatment of malaria?

Search has been made in recent years to find a substance which could be manufactured from cheaper substances and has resulted in the discovery of atabrine and plasmochin. Both have been valuable drugs; both have their drawbacks. Probably in a few years we will have a synthetic substance that is a specific against malaria.

THE TREATMENT OF MALARIA*

OSCAR W. BETHEA, M. D.
NEW ORLEANS

In this section of the country most of us are so accustomed to treating malaria ac-

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 23, 1941.

cording to the methods taught by Bass,[4] Craig[2] and a few other "old masters" that it may prove interesting to review some of the work of the world at large. It is worth while to pause and consider whether or not we are justified in continuing our present plans of therapy, and if we are keeping pace with current knowledge in the management of this disease. In the recent past, reports from work done in the United States have been comparatively few and somewhat limited in extent.

The number of so-called specifics has increased markedly during recent years. Clark,[1] in his excellent review of the literature, discussed thirteen. My own studies included twenty-three. Most of the new additions have developed around atabrine. It is rather difficult to evaluate reports in foreign literature on most of these, as the same chemical agents may have different names in different countries.

In America, quinine, atabrine and plasmochin are used almost exclusively. Craig[2] states: "At the present time there are three drugs available for the treatment of these infections, each of which has a definite place in therapeutics, and, if used properly, they are sufficient to eradicate or cure possibly all malarial infections. These are quinine, plasmochin and atabrine." The Fourth General Report of the Malarial Commission of the League of Nations[3] in the "Conclusions" states: "Among those drugs, quinine still ranks first in current practice, by reason of its clinical effectiveness and almost complete absence of toxicity, coupled with the widespread knowledge of its use and dosage. As regards the synthetic products, which have only been used in therapeutics for ten years, the Commission hopes that it has discharged the duty which devolved upon it by giving in this Fourth General Report an account of the present state of our knowledge regarding the possible use of atabrine and plasmochin in the treatment and prophylaxis of malaria. In certain circumstances, as has been shown above, these drugs—representing a notable scientific advance—possess a very special value."

TRENDS IN THERAPY

There seem to be several trends in the field of malarial therapy, as a result of many possible factors. A plan of treatment that would be best for a patient in a Louisiana hospital or a well-ordered home in this country, might not be practical in an outlying camp in the tropical jungles of Central America, or for the natives attending a dispensary in North Africa. Such factors must be considered as the probable cooperation of the patient; the facilities for carrying out a complete plan of treatment; the probabilities of infection and reinfection; the degree of acquired immunity of the people to be treated; and the cost in time and money.

THE STANDARD TREATMENT

In this country, specific therapy is largely confined to two routine procedures: (1) The standard treatment with quinine; that is, 10 grains of quinine sulfate three times a day for three days, or longer if necessary, to control clinical symptoms; then 10 grains of quinine sulfate each night for eight weeks, or longer if necessary, to render the patient free of the plasmodia; (2) atabrine, 1½ grains (0.1 gram) three times a day for five days. Recently there has developed a tendency to supplement both of these with a course of plasmochin.

Quinine acts slowly upon the gametocytes of all species of plasmodia and atabrine has limited effect upon the gametocytes of the *Plasmodium falciparum*. It is important to render the patient non-infectious to mosquitoes as promptly as possible and, as plasmochin will destroy the gametocytes of all the plasmodia, it is being used with increasing frequency. In this country, it is customary to give 1/6 grain (0.01 gram) two or three times daily for five days, during the second week of the quinine treatment or three days after the close of the atabrine treatment. It is not employed at the same time as atabrine as the two are toxic if used together.

I agree with the statement of Bass,[4] "Quinine in the treatment of malaria is one of our best examples of specific drugs." Craig[2] is expressing the consensus of medi-

cal opinion in this country when he says, "Quinine is a true specific in the treatment of malaria and if administered in sufficient dosage over a long enough period of time it will eliminate malarial infection." In other words, when the patient is under sufficient control and suitably protected from mosquitoes it will meet all of the requirements of therapy. Where this plan has failed, it has been due probably to the patient's not taking the drug in the proper dosage for the proper length of time. Quinidine may be used when the patient has an idiosyncrasy for quinine.[5, 6]

SHORT-TERM TREATMENT

The "short-term treatment" with quinine is receiving much attention, especially outside of this country. It is not new. It is as old as the use of the drug itself, but is being revived upon a scale that is hard for us to understand. We had thought that chapter closed by the development of the standard treatment by our National Committee for Malaria[7] in 1919. The Malarial Commission of the Health Organization of the League of Nations, however, has given the weight of its endorsement to this therapy. It consists essentially of the administration of 1 gram (15 grains) of quinine for a period of from five to seven days, then discontinuing treatment. When the infecting organism is the *Plasmodium falciparum* the dosage is 1.3 gram (20 grains) and it is admitted that as much as 2 grams daily may be necessary at times to control the clinical symptoms.

Sinton,[8] who is probably the leading champion of this plan of therapy, makes the following recommendations: "When infections are contracted by individuals resident under conditions in which the chances of reinfection, except at comparatively long intervals, are slight, the treatment of choice is one which will produce a radical cure of the infection at the earliest possible moment.

"When individuals are resident under conditions where they are exposed to frequent and to constant risk of infection, reinfection and superinfection, the object of treatment should be the rapid reduction or the clinical cure of each attack and not a radical cure of the infection.

"When individuals are exposed only temporarily to chances of frequent infection and superinfection, then clinical prophylaxis of the disease with appropriate drugs is the procedure of choice."

The idea back of this plan of treatment, therefore, is to relieve the patient of the symptoms during each attack, in the hope that he will build up an immunity or at least a premunition to the disease. It is recognized that 25 to 50 per cent of relapses occur. What advocates of this treatment do not seem to recognize is the tremendous number of carriers that are kept in a community as filling stations for anopheles mosquitoes with the concomitant spread of the disease. Not only is the individual reinfected, but everyone else in the community is a potential victim.

Craig[9] sums up the general medical opinion in this country when he states substantially that neither immunity nor premunition develops, that this treatment does not cure but a small percentage of cases, that it increases the number of carriers, perpetuates and spreads infection through increasing the number of infected mosquitoes, and inevitably leads to a full measure of disability, and death, especially in children.

As I understand it, the Fourth General Report of the Malaria Commission of the League of Nations[3] is based to a large extent on the study of the results of this plan in 12,288 persons treated principally in Algeria, Sardinia, the Federated Malay States and in certain sections of Rumania and Russia. Not only environments, but the peoples themselves differ materially from those found in our section of the world.

The standard treatment was based not only on a large experience among our people, but particularly on a study of a group of over 30,000 patients treated under conditions and with facilities that were unexcelled.[10] It constituted the largest clinical experiment ever carried out in malaria.

In reviewing the foreign literature on malaria for the past four years, I was much impressed, in fact rather bewildered by one

finding. In the hundreds of reports from Europe, Asia and Africa, quinine and many other drugs were reported as having been used in many and various dosages, but I found not one single reference to the standard treatment or one report on a group of patients treated by this plan. They seem to have ignored entirely the work done in this country.

The most interesting report on prophylaxis has been that of Castellani,[11] covering the Ethiopian campaign. Each soldier was given a 3 grain (0.2 gram) tablet of quinine three times daily and tests were made from time to time to determine if the drug was being taken. Among approximately 500,000 soldiers operating in an intensely malarious country, there were only 1,241 hospital admissions for primary malaria and 1,093 for relapses.

In the management of emergencies and in such phases of the subject as chronic malaria and mass treatment, nothing of interest seems to have been developed in recent times.

CONCLUSIONS

The number of specific agents for the treatment of malaria is constantly increasing but only three have been generally accepted in this country.

In the Old World the short-term treatment with quinine and with many new synthetics is the present fashion.

The reports in foreign medical literature on the treatment of malaria are far from convincing.

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DISCUSSION

Dr. J. P. Sanders (Caspiana): I feel a little hesitancy in following a man of Dr. Bethea's capability, but I am very interested in the subject, and, as most of you know, have used a great deal of quinidine. I originally started off on it because of a patient who had an idiosyncrasy to quinine.

The trend, it seems, toward the short course has been rather phenomenal in the last few years. I have not made any direct comparison with the long course, but the short course seems to work so well, that it seems the logical thing to do. In other words, you can get a patient to take quinine, or quinidine, or atabrine for four or five days. We realize that in the malarial districts in Louisiana, persons either do not get well or they become re-infected rather quickly. That, apparently, for the average patient means 17 per cent for the season, according to my work in 1937. It is rather interesting to follow statistics because you can prove anything with them. And it is interesting to know what the author means by a "cure," whether he means a 100 day cure or a permanent cure. I believe pretty strongly in the development of the patient's immunity. It explains a whole lot just what happens. We see families, with a great many in the family, and only one or two have malaria, sometimes for four or five years, and the rest will not have it. I personally have not had malaria since I have been here. I was born and reared in a malarious district in Texas, and had malaria every year till I was about 16 and I have not had it since—even though I have been bitten by mosquitoes many, many times.

The big trouble in so far as the carrier proposition is concerned is the gametes. Plasmochin, of course, is recommended by many. If we could tell what patients were carrying gametes, I think it would help solve the problem to get rid of malaria. But these showers of gametes come into the blood stream for some unknown reason, and thus, the mosquito is re-infected, and subsequently the patient.

A great many other drugs have been recommended for malaria. There is the new synthetic drug, sulfanilamide and its derivatives. I have stuck to the cinchona alkaloids largely, though I have treated 108 patients with atabrine and a few with sulfanilamide and sulfapyridine. But quinine and quinidine to me are probably still the safest in all cases. I have given quinidine to patients as you would quinine without any bad results. I

have given it to infants a few months old and to elderly people in the eighties. If many people used quinidine, the supply would run out; 100 times as much quinine is produced as quinidine. I think that atabrine has been given a black eye by some people who claim too much for it. They claimed that it would cure too high a percentage of patients; as much as 95-100 per cent. In my experience, there has been a strong similarity between the different drugs and the percentage of cures I have gotten. It was around 60 to 75 per cent for atabrine and the cinchona alkaloids.

Dr. Daniel W. Kelly (Oak Grove): My talk will be that of a country doctor. Malaria is being treated with atabrine in the country districts by the druggist. The physician prescribes the sixty day quinine treatment for malaria. A week later, after the patient stops his quinine, he is reinfected with malaria. He is dissatisfied. He talks with a neighbor who was sick about the same time and to whom the druggist sold 15 atabrine tablets. The patient who took atabrine had no relapse. Needless to state he will not go back to the doctor for more quinine.

I believe in atabrine and plasmochin in the treatment of malaria. If the doctor will provide for free elimination with Epsom salts during the course of the treatment there will be no unfavorable results. I even use atabrine as a therapeutic test in patients who have continued fever of undetermined origin.

Dr. Arthur A. Herold (Shreveport): In the early days of atabrine, there were many reports as to severe neuropsychiatric manifestations following its use. I would like to ask Dr. Bethea if those reports are still coming in?

Personally, I saw a patient, shortly after atabrine came in, who came to the hospital with a severe type of malaria—I have forgotten the form. He had taken two courses of atabrine and was still having fever. I gave quinine with good results. I presume the same thing would have happened if the patient had had quinine and I had given atabrine. Since then, I have stuck to quinine therapy.

I had an acute attack of malaria in 1918 and I followed the course of treatment as laid down by the late Prof. J. B. Elliott, Sr. I took 30 grains quinine daily for three days and then took 10 grains at night every week, preceding the chill day and 10 grains the following morning for six weeks. The cure was complete, as I have had no recurrence to this day. I feel that quinine, properly administered, will give satisfactory results.

Dr. Wm. W. Armistead, Jr. (Barksdale Field): One point I would like Dr. Bethea to answer in closing, and that is the question of pneumococcal pneumonia treated with sulfathiazol or sulfapyridine, which is complicated with malaria. I wonder which of the drugs he has mentioned, atabrine or quinine, he considers preferable in this sort of case?

Dr. Randolph Unsworth (New Orleans): Dr. Bethea's talks are always very interesting and stimulating. I have treated three cases of acute atabrine psychosis, but was unable to be definite as to whether the atabrine precipitated the psychosis or if the psychosis was a toxic one due solely to atabrine.

Dr. J. E. Knighton (Shreveport): In connection with the administration of atabrine, we frequently observe discoloration of the skin which calls for a differential diagnosis between staining of the skin by the drug and hemolytic jaundice due to malaria.

There is one dependable and reliable point of difference, the staining of atabrine never involves the sclerae, while this is one of the first tissues to show discoloration from jaundice.

Dr. Oscar W. Bethea (In closing): Answering the question of Dr. Herold relative to the neurotoxic status of atabrine—many unfavorable reactions have been reported but they are probably rather infrequent when we consider the large amount of the drug that is used. We must also remember the tendency of malaria itself to produce such evidence. A personal communication from the Superintendent of the Colon Hospital some years ago reported that they used atabrine exclusively in the treatment of malaria and had noticed no neuropsychic complications. I have handled one such patient personally and felt that there was no doubt as to the diagnosis. The consensus seems to be that toxic developments of atabrine are usually the result of overdosage and it is urged that the treatment not exceed 0.1 gram three times a day for five days.

With regard to the efficacy in malaria of the sulfonamide products, the majority of recent reports covering sulfanilamide indicate that it is practically valueless in the treatment of this disease. I understand that some work is being done in the East with other related products and that the results are most encouraging.

Regarding the combination of arsenic and quinine, formerly some of the Fruit Companies routinely employed sodium cacodylate with the quinine treatment. In the first edition of Beckman's "Treatment in General Practice", he recommended neoarsphenamine. Reports coming in from reliable sources in the past three or four years indicate that arsenic is rarely employed in the treatment of malaria.

Answering the question as to the high mortality among the narcotic addicts who develop malaria from the use of a common syringe, I observed several of these patients who were treated at Charity Hospital and had the privilege of discussing the presentation of Dr. Hull before the medical faculty of Louisiana State University. Most of these deaths occurred before the true condition was real-

ized. A dope addict would be found unconscious, would be taken to the police station and locked up for the night and the opportunity for medical service be lost. I understand also that in some of these cases, the malaria was treated but the accustomed opiate was abruptly withdrawn. This may have had an unfavorable effect upon the outcome.

With regard to the relative value of atabrine and quinine, I am reminded of one of my last meetings with Colonel Craig. We had attended a banquet in the Vieux Carre and were returning to our car. I had been trying to make him express his preference in regard to these two drugs. I finally stopped in front of a show window where I could observe his expression and said, "Colonel Craig if you were taken sick tonight with malaria which would you take, atabrine or quinine?" A look of patient surrender and resignation came over his fine face as he replied, "Dr. Bethea, I would take atabrine."

RENAL DAMAGE FOLLOWING THE USE OF SULFATHIAZOLE

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AND
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When a new drug becomes widely used its therapeutic advantages are rapidly publicized but disadvantages and harmful properties are often learned slowly. Since the advent of sulfathiazole in 1939,[1] its toxicity has been in the process of evaluation, both experimentally and clinically. During the past two years of its use there have appeared reports of 23 patients who developed renal complications following the administration of the drug.[2-9] In a previous paper[10] six more patients were added to this series. In this report two others are added, bringing the total to 31. Certainly this does not represent or indicate the total number of patients who have sustained renal damage from the use of this therapeutic agent. Many instances of renal complications go unrecognized because of the lack of sufficient study, and awareness of the condition. The purpose of this report is to describe two more patients, who have suffered renal damage from sulfathiazole, to describe the clinical and pathologic syndrome, to outline preventive measures, and to describe the treatment of the complications once they occur.

From numerous experimental studies much has been learned about the mechanism of the production of the renal damage and its management. A review of these observations is beyond the scope of this report, as the subject has been reviewed previously.[10]

The patients who sustained renal damage usually presented hematuria (gross or microscopic), oliguria, renal pain and impairment of renal function which usually progressed rapidly to uremia. At autopsy, the kidneys were found to be enlarged grossly; there were marked striae running from the cortex to the pelvis and crystals were found within the nephrons and pelves. The capsule usually stripped easily. At times the trigone of the urinary bladder was congested and crystals could be found in this region. Microscopically there was hydronephrosis of the tubules and the pelves. The tubules and Bowman's capsule were markedly dilated. The acetyl derivative of sulfathiazole was usually absent in the lumina of the tubules of hematoxylin-eosin preparations (fig. 1). This material was found to be present in great abundance in the tubules in frozen section, completely filling the lumina (fig. 2). Erythrocytes were also found in Bowman's spaces, the tubules, and pelves. There was swelling of the glomeruli with an increase of cement hyaline substance. Focal areas of peritubular leukocytosis and tubular necrosis were noted throughout the renal parenchyme. The conjugated sulfathiazole concretions in the tubules and pelves polarized light (fig. 3).

The mechanism of the renal damage is not clear. Anatopol and Robinson[11] attribute the damage to: (1) ureteropelvic hydronephrosis or tubular hydronephrosis depending upon the site of the obstruction produced by the concretions of the sulfathiazole derivative, and (2) to toxic effects produced by the sulfathiazole on the renal parenchyme independent of obstruction. In

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fact, they believe the latter may even predispose to crystal formation.

Sulfapyridine produces renal damage similar to that described for sulfathiazole. Sulfanilamide very rarely produces renal injury. Wood[12] reported a patient who developed renal damage subsequent to an acute hemolytic anemia following sulfanilamide administration. The convoluted and collecting tubules were filled with pigment which stained positively for iron. This type of renal damage occurs in blackwater fever.

Sulfathiazole is rapidly absorbed from the gastrointestinal tract, produces variable blood levels, and acetylation is limited. It is excreted rapidly by the glomeruli and reabsorption by the tubules is poor because of its relative insolubility in urine. Sadusk, Blake, and Seymour[13] found that a 4.2 gram oral dose in an adult male results in a peak in blood level of 9 mg. per 100 c. c. in three hours. These authors found that 40 per cent of the drug was excreted in six hours and 70 to 80 per cent in 24 hours. Because of the rapid and variable absorption it is necessary to check the blood levels often, particularly when renal function is impaired initially. Carroll, Kappel, and Lewis[14] stress the need for controlling the blood level in order to control the pharmacologic and toxic effects of the drug. These observers state that a blood level of 5 mg. per 100 c. c. is safe and therapeutically effective. Rammelkamp and Stoneburner[15] found that 2 to 4 grams of sulfathiazole daily were sufficient to sterilize the urine in patients with mild urinary tract infection. Culp[3] believes that large doses predispose to renal injury.

The degree to which sulfathiazole is acetylated will have some bearing on the extent of urolith formation as the acetyl form is very insoluble. Acetylation of sulfathiazole is slight and variable, 0 to 30 per cent, with a mean of about 12 per cent.[13] In patients with congestive heart failure and renal damage, acetylation is increased as well as is the sulfathiazole blood level. The average dosage may be followed by a level of 15.9 mg. per cent. This is said to be due to the prolonged recirculation of the drug through the liver.

The following patients illustrate some of the points discussed above and also bring out some of the problems of diagnosis, prevention, and treatment.

CASE NO. 1

M. P., a 52 year old white American housewife entered Charity Hospital on January 5, 1942, complaining of epigastric pain of two weeks' duration. The patient had been well previous to December 22, 1941, at which time she developed precordial pain, signs of congestive heart failure, and on one occasion, she vomited one tablespoon of blood. On admission, the temperature was 98.6° F.; pulse rate 110 per minute; respiration rate 20 per minute; and blood pressure 130 mm. mercury systolic and 90 diastolic. The positive findings only are recorded. The neck veins were distended. The chest revealed scattered, crepitant rales bilaterally. The heart was enlarged to percussion to the right and left anterior axillary lines. There was auricular fibrillation. There were no murmurs, thrills, or friction rubs. The liver was palpable four centimeters below the right costal margin. There was slight edema of the extremities.

On January 6, 1942, the blood examination revealed a moderate leukocytosis. The urine was repeatedly acid and had a specific gravity of 1.030 with three plus albumin, 5 to 10 erythrocytes per high powered field. The Kolmer and Kline tests were negative. The electrocardiogram showed auricular fibrillation, and right bundle branch block. X-ray of the chest showed cardiac enlargement to the right and left, prominent pulmonary conus, and chronic passive congestion of the lungs. The right anti-cubital venous pressure was 230 mm. of water and the decolin circulation time was 36 seconds. The patient was digitalized rapidly by Eggleston's method. On January 10, 1942, she complained of pain over the right lower chest and coughed up 3 c.c. of bloody sputum. Physical examination of the chest revealed bronchial breathing, dulness to percussion and subcrepitant rales over the right hemithorax posteriorly. On the evening of January 10, 1942, sulfathiazole was administered orally in doses of 2 grams immediately and 1 gram every four hours for six doses, to be followed by 1 gram every six hours. Nine grams were given in all. No sodium bicarbonate was given. The fluid intake and output were recorded as follows:

Date	Intake c.c.	Output c.c.
January 5, 1942	480	175
January 6, 1942	480	445
January 7, 1942	240	250
January 8, 1942	1720	420
January 9, 1942	1600	700
January 10, 1942	1465	550
(Sulfathiazole started)		
January 11, 1942	500	1070*
January 12, 1942	425	300*

*(catheterized)

On January 11, 1942, the patient had difficulty voiding and 300 c.c. of urine were obtained by catheter. A thoracentesis was done and 4 c.c. of bloody fluid were removed. On January 12, 1942, she was again catheterized and again bloody urine was obtained. There was no microscopic evidence of sulfathiazole crystals in the urine. The patient expired on the afternoon of January 12, 1942.

NECROPSY FINDINGS*

The autopsy findings revealed a right hydrothorax, pulmonary infarction, mitral stenosis, cardiac enlargement and chronic passive congestion of the abdominal viscera. The kidneys weighed 200 grams each. The capsules stripped with ease revealing a swollen, congested, smooth red surface. The cortex measured 7 mm. The line of demarcation between the cortex and medulla was indistinct. The mucosa of the calyces, pelves, and ureters was congested. Yellow, gritty granules were seen in the pelves and ureters. A probe could be passed into the ureters and bladder without difficulty. There was no evidence of extra-renal urinary obstruction. The urinary bladder was congested and hemorrhagic, being most marked in the region of the trigone.

Microscopically, (fig. 1, 2, 3, 4) the kidney capsule was of normal thickness. An occasional scar was present at the cortical surface within which there was some lymphocytic infiltration. The glomeruli were generally enlarged and swollen and showed dilatation and congestion of the capillaries. The convoluted tubules showed cloudy swelling, mild dilatation and desquamation. The intertubular capillaries were markedly congested. No sulfathiazole crystals were seen (fig. 1).

Sections of kidney were fixed in formalin for 24 hours and frozen sections revealed no crystal formation when viewed with the regular and polarizing microscope, (fig. 4). Fresh unfixed frozen sections showed masses of crystals in the collecting tubules, particularly just proximal to the papillae (fig. 3). These definitely polarized. Sections of the liver and spleen showed elements within the sinusoids which polarized.

COMMENT

The onset of renal damage was typical. It began suddenly 34 hours after beginning the administration of the drug and after only 9 grams had been given. There was only hematuria, no casts or crystals of sulfathiazole were found. The renal function was not examined nor was the blood urea nitrogen determined. The patient died rather suddenly. Renal damage was favored by several factors:

(A) The patient was dehydrated because of: (1) vomiting; (2) insufficient administration of fluid, and (3) congestive heart failure which was progressing. Curtis and Sobin[16] found that a 2000 c. c. of urine output daily is necessary to prevent the formation of acetyl sulfathiazole crystals in acid urine for a 2 gram daily intake and that a 6,000 c. c. output is necessary for a 6 gram intake. With an alkaline urine a 1,250 c. c. and a 3,750 c. c. output daily would be necessary for doses of 2 and 6 grams daily intake respectively. On the day of administration of sulfathiazole, she excreted only 550 c. c. of acid urine.

(B) The acid urine being excreted by the patient predisposed to urolith formation (*vide supra*).

(C) The congestive heart failure and possible preexisting renal damage by increasing acetylation of the sulfathiazole, the highly insoluble conjugated form, likewise, predisposed to urolith formation and renal injury.

(D) The above three factors predisposed to tubular obstruction rather than ureteropelvic obstruction. Tubular obstructions often follow the use of small amounts of the drug administered in the usual manner.

The histologic picture described and illustrated above is typical. Figures 1 and 2 illustrate how important it is to make frozen section preparations of the kidneys before fixing if the crystals are to be demonstrated. Figure 3 shows the value of polarization of light by the crystals in identifying them. Figure 4 illustrates the absence of crystals in frozen sections of formalin fixed kidney tissue, showing that the crystals are dissolved away early in the process of making stained tissue preparations for histologic study.

CASE NO. 2

I. J., a 54 year old white American male, entered Charity Hospital on January 10, 1942, complaining of cough of ten days' duration. On January 1, 1942, he developed an upper respiratory tract infection followed in six days by congestive heart failure. The family doctor stated that he

*We are indebted to Dr. Joseph Ziskind of the Department of Pathology of Tulane School of Medicine for the pathologic interpretations of these findings.

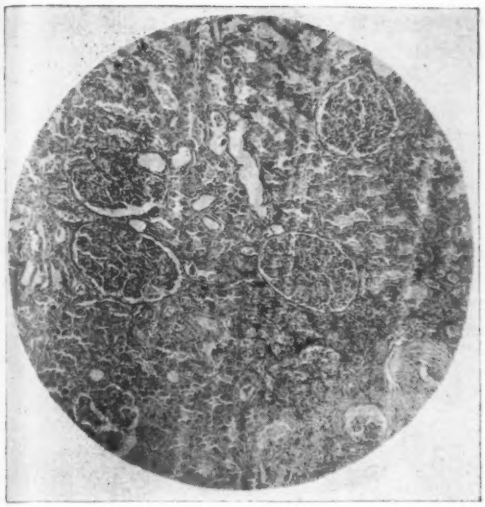

Fig. 1. A hematoxylin-eosin preparation from the kidney of patient number 1, which was prepared by the standard paraffin method. No sulfathiazole crystals were seen with the regular or polarizing microscope.

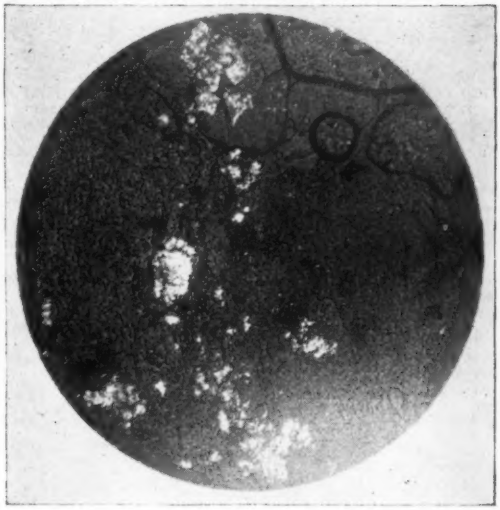

Fig. 3. Sulfathiazole crystals in the kidney as seen using unfixed tissue prepared by frozen sections and using polarized light. The crystals are easily seen. The tissue is from patient number 1.

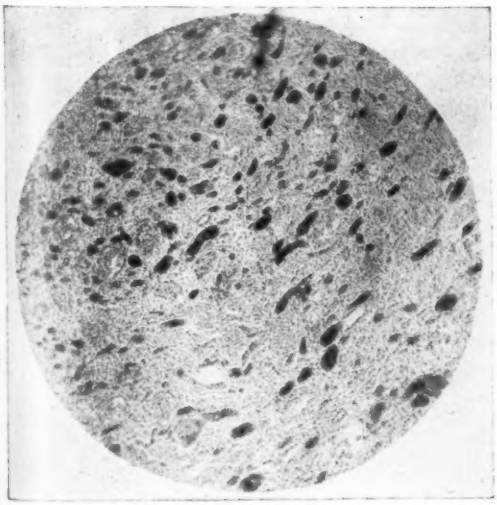

Fig. 2. A frozen section of fresh unfixed kidney tissue from patient number 1 with sulfathiazole concretions completely filling the lumina of the tubules.

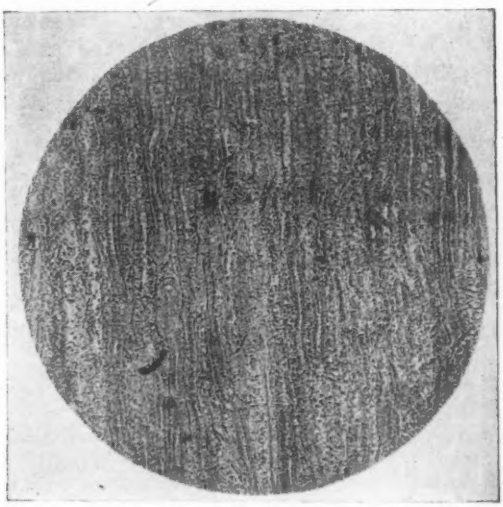

Fig. 4. A frozen section of a portion of formalin-fixed kidney from patient number 1. There is no evidence of crystals of sulfathiazole in the lumina of the tubules, the crystals having been dissolved during fixing.

had previously had an interstitial nephritis. He thought he had not taken sulfathiazole previously.

On admission, the temperature was 99° F.; pulse rate 110 per minute; respiration rate 30 per minute; and blood pressure 160 mm. of mercury systolic and 100 diastolic. There was dulness to percussion and rhonchi at the left base. Dry, sonorous rales were heard throughout the chest bilaterally. The point of maximum impulse was felt 3 cm. beyond the left mid-clavicular line. There was no edema of the extremities.

On January 10, 1942, there was a mild anemia, and a leukocytosis of 20,000, with 81 per cent polymorphonuclear cells. The urine was acid, specific gravity 1.018, and contained no albumin, casts or erythrocytes. The sputum was normal. Kline and Kolmer tests were negative. X-ray of the chest showed moderate enlargement of the cardiac shadow, passive congestion of both lungs and fluid at the left base. The electrocardiogram was normal.

On January 10, 1942, he was given sulfathiazole orally in dosage of 2 grams immediately, 2 grams in two hours and 1 gram every four hours thereafter. Hypertonic glucose, aminophyllin, digitalis, ouabain, phenobarbital, ephedrine sulfate, and ammonium chloride were administered in the subsequent four days. On January 12, 1942, the blood sulfathiazole level was 20 mg. per cent. On January 14, 1942, gross hematuria was noted. On examination the urine was packed with red cells and contained 3 plus albumin. In the preceding four days the patient had received 9 grams of sulfathiazole and 2 grams of ammonium chloride. The average fluid intake during this time was 600 c.c. a day. The blood urea nitrogen was 34 mg. per cent, creatinine 3.2 mg. per cent, carbon dioxide combining power 32 volumes per cent and the blood sulfathiazole 21 mg. per cent. The sulfathiazole and ammonium chloride were stopped following the appearance of hematuria, and the urine was alkalinized, using 2 grams of sodium bicarbonate three times daily. Fluids were forced and caffeine sodiobenzoate was given to initiate diuresis. On January 16, the blood urea nitrogen was 57 mg. per cent, creatinine 4.5 mg. per cent, carbon dioxide combining power 40 volumes per cent, and the blood sulfathiazole 4.4 mg. per cent. No crystals were seen in the urine. At this time he was cystoscoped and no uretheral obstruction was found. The trigone was not inflamed and the ureteral orifices were patent. Inlying ureteral catheters were passed into each pelvis and clear urine was obtained from each side. Indigo carmine was not injected. The catheters were left in place and the pelves were irrigated with warm, normal saline day and night. Fifty per cent dextrose was given intravenously and diathermy applied to the kidney region. For the three days preceding his death, the urine output was 1700, 1500, and 1200 c.c. daily. Erythrocytes were present in all specimens. On January 20, the temperature rose to 105.5° and the patient expired.

NECROPSY FINDINGS

The left kidney weighed 230 grams and the right 170. The left kidney was polycystic and extended from the diaphragm superiorly to the brim of the pelvis inferiorly. A single cyst at the superior pole measured 5 cm. in diameter; the four or five remaining cysts were smaller. The main body of the organ was contracted and somewhat granular. The capsule was thickened and could not be stripped. The cut surface was red and edematous and the line of demarcation between the cortex and medulla could not be defined. The tubules were not visible grossly and no crystals were seen in the kidney parenchyma or in the renal pelvis. The right kidney was contracted and scarred and was similar to the left with the exception that localized areas of purulent material were seen on sectioning. The pelvis contained 3 c.c. of purulent exudate which was free of crystals. Microscopic examination of the pelvic contents revealed clumps of leukocytes, an occasional erythrocyte but no sulfathiazole crystals.

Hematoxylin-eosin sections of the kidneys revealed thickening of the kidney capsule and a generalized interstitial infiltration with polymorphonuclear and lymphocytic cells. Numerous circumscribed areas of leukocytosis were located in the cortex and medulla, particularly in the right kidney. There was extreme medial thickening of the arterioles and interlobular arteries. The tubules were markedly dilated and were filled with polymorphonuclear cells and erythrocytes. Some of the glomeruli showed obvious thickening of Bowman's capsule. The glomerular basement membrane was notably thickened and an occasional hyalinized glomerulus was present. In some of the scarred areas colloid casts were found within the tubules. No crystals were seen in these sections. Frozen sections of formalin fixed tissue were made of the liver, spleen, and kidney. The sulfathiazole crystals were seen with either the regular or polarizing microscope. Frozen sections were then made of unfixed tissues and typical crystals were seen in the kidney (fig. 5). Polarizing bodies were seen in the liver and spleen.

COMMENT

In the second patient, the soil was well laid for the production of sulfathiazole nephritis. An elderly man with a previous history of renal disease and with symptoms of nocturia entered the hospital with congestive heart failure. These factors as well as the poor intake of fluids lead to retention of the drug with increased acetylation of the drug in the liver. As the acetyl form is only one-tenth as soluble as the free form,

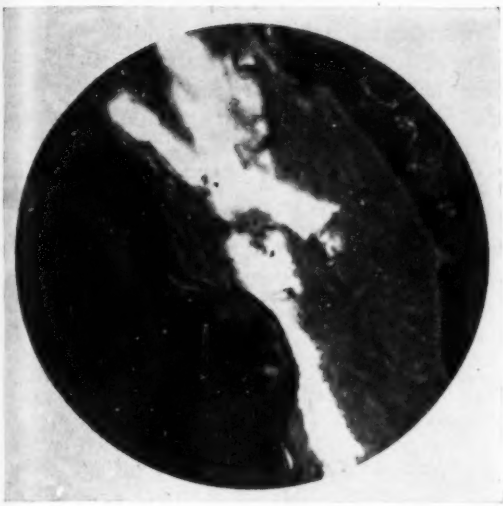

Fig. 5. Sulfathiazole crystals in a kidney tubule prepared by unfixed frozen section and viewed through the polarizing microscope. The tissue is from patient number 2.

the likelihood of crystal formation in the tubules was increased. The administration of ammonium chloride was contraindicated as the acetyl sulfathiazole crystals are much less soluble in acid urine as previously stated. From the data it is impossible to know if this patient had his acidosis and elevated blood urea nitrogen before sulfathiazole was given, or if this was the result of sulfathiazole administration. If there was a question of the state of the kidneys or of his blood acidity, a carbon dioxide combining power and blood urea nitrogen should have been determined before the drug was administered. Patients developing sulfathiazole nephritis frequently follow the sequence of drug, hematuria, and oliguria. Although hematuria and oliguria are usual, they are not always present. A rising blood urea nitrogen is helpful in diagnosis.

This patient was treated by intensive irrigation of the ureters and pelves using normal saline and by intensive diuresis. In spite of these measures, crystals of sulfathiazole were found in the tubules of the kidney (fig. 5) even though the drug had been stopped for four days and in spite of the intensive diuretic measures. Furthermore, the chronic renal disease, polycystic kidney, pyelonephritis, and arteriosclerotic disease, all predisposed to interference with the elimination of the drug and likewise favored crystal formation.

DIAGNOSIS

The diagnosis of renal damage is not difficult if the patient has been properly studied before and during treatment with sulfathiazole. The appearance of hematuria, oliguria, backache, renal colic, tenderness over one or both kidneys, progressive nephromegaly, decreasing renal function and azotemia in a patient who is receiving sulfathiazole should make one suspect renal damage. Rarely do all of these findings exist simultaneously. The presence of one of the findings alone or any combination of them is sufficient for a tentative diagnosis. Cystoscopic examination will usually establish the diagnosis. Crystalluria (sulfathiazole) may aid in establishing a diagnosis, but the mere presence of crystals in the urine does not indicate renal injury. Furthermore, it should be remembered that renal damage will occur when the previous doses were small or the blood level low. If the renal state is carefully studied and an estimate of renal function made before treatment is started, and renal function is religiously observed from day to day, renal damage can be detected very early.

PROPHYLAXIS

The prevention of injury to the kidneys by sulfathiazole is not difficult if certain rules previously described[10] are followed. They are: (1) Determine whether or not the patient has had any one of the sulfonamide drugs before. If the history is not reliable then it is advisable to determine the blood level and prescribe accordingly. This will tend to prevent overdosage and reduce the likelihood of injuring the kidneys.

(2) Evaluate the state of the patient's renal function and the nature of the urine being excreted before administering the drug. In the presence of impaired renal function there is a greater chance for overdosage and renal damage. Furthermore, in-

fectious states, for which the drug is used, will in themselves produce renal changes with casts, erythrocytes, and albumin in the urine. It is, therefore, necessary to know whether or not findings in the urine following the use of sulfathiazole are due to the drug or previously existing infection. In the presence of marked renal damage proceed carefully with the drug, check the urine frequently, and determine the blood sulfathiazole level often. Should hematuria develop or renal function definitely decline, stop the drug immediately. Do not allow the blood levels of the drug to increase above accepted therapeutic values. In some instances, it might be well to determine the blood levels of urea nitrogen or total nonprotein nitrogen before giving sulfathiazole to patients who have evidences of impaired renal function determined by urea clearances, concentration tests, and the like. Such determinations will aid in supporting other findings in the future, especially if renal complications are suspected. Palpate for the kidneys before and during the use of the drug.

(3) The hydration of the patient should be evaluated. A markedly dehydrated patient will take in a great deal of fluid and excrete very little and therefore, will be more likely to experience renal damage. Chart the fluid intake and output and make sure that the urine output is of good volume before and during the use of the drug. Curtis and Sobin[16] have shown that 2,000 c. c. of urine output daily are necessary to prevent the formation of acetyl sulfapyridine crystals in acid urine of low specific gravity for a 2 gram daily intake and that 6,000 c. c. are necessary for a 6 gram daily intake. Once oliguria develops in spite of a large fluid intake the drug should be stopped. If for any reason the urine volume cannot be kept up to high levels then do not use sulfathiazole, but sulfanilamide.

(4) There is some disagreement among observers as to the influence of the pH of the urine on the incidence of renal damage (*vide supra*). Since some believe that an alkaline urine tends to reduce crystal formation[16] and if the use of alkalies and an alkaline urine are not contraindicated in a particular patient, then it would be well to administer alkalies and maintain an alkaline urine. Do not employ acid forming drugs such as ammonium chloride.

(5) There is some evidence to indicate the development of hypersensitivity to the sulfonamides.[17-19] It is well, therefore, to be extremely cautious and particularly vigilant in the treatment of patients who already suffer from a form of allergy. Patients who have recently received a sulfonamide drug may have been sensitized to such drugs and will react allergically if given another course of one of them.[17] It is better, if there is no need for haste, to give these two types of patients about one-third of a gram of the drug by mouth and wait twelve hours. If no unfavorable reactions result, then proceed with the treatment. Such a procedure should also be employed, if possible, in all patients so as to eliminate unpredictable severe reactions that occur because of idiosyncrasy to the sulfonamides.

TREATMENT

The drug should be stopped immediately once the slightest evidence of renal injury is discovered. Fluids should be administered in large quantities. The pelves should be catheterized and the catheters should remain in place until a normal flow of urine has been reestablished. The pelves should be irrigated every two hours with warm (107° F.) sterile distilled water. This procedure will relieve ureteropelvic obstruction but will have no effect on tubular obstruction. The latter should be treated by an intense diuretic regimen.

The diuretics should be large quantities of fluid, and, if indicated, hypertonic glucose solution. Mercury and acid diuretics should not be used. The urine should be kept alkaline with sodium bicarbonate and the patient should be given an alkaline ash diet. The protein intake should be restricted for four to five days or during the period of oliguria, hematuria, and azotemia and then the protein intake should be limited to 1 gram per kilogram of body weight until the renal function has returned to nor-

mal. The urine output should be maintained at a high level for many days after renal function has returned to normal.

It is not known whether or not the renal damage is permanent. Studies in experimental animals indicate that the damage may be either irreversible or reversible. There are no studies in which patients have been followed sufficiently long to throw light upon this problem. Some of the patients have had severe impairment of renal function and following proper therapy, have returned to normal as determined by clinical and laboratory methods over a comparatively short period of time.[10] Such patients should be studied carefully from time to time for months, and even years, to make sure there is no residual or latent damage. Such changes may become manifest later as a chronic disease. Any changes in the renal state should be treated accordingly.

SUMMARY

The pharmacologic, toxic, pathologic, and clinical aspects of sulfathiazole therapy in light of resultant renal injury have been discussed briefly. Two patients have been presented to illustrate these points.

Frozen sections of fresh kidney tissue should be made in all patients who have received sulfathiazole in order to demonstrate the sulfathiazole concretions in the tubules because the drug may be dissolved early (during fixation of the tissues in formalin) or in the process of fixing the tissues for staining and histologic study. The property of polarization of light by the deposits of the sulfathiazole derivatives in the frozen sections may be used to aid in identifying the drug *in situ*.

Five preventive measures have been outlined to reduce the likelihood of renal damage from sulfathiazole therapy.

The treatment of renal injury produced by sulfathiazole has been discussed. The drug should be stopped immediately and fluids should be forced in an attempt to insure a large urinary output to dissolve the sulfathiazole crystals. These are the two most important immediate therapeutic procedures. The pelves of the kidneys should be catheterized and irrigated with warm sterile distilled water. Such irrigations will only remove crystals in the pelves and obviously will not dissolve any of the crystals blocking the tubules. The diuresis produced by forcing fluids will have the latter action. Acidifying diuretics especially should not be used.

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ARSENICAL ENCEPHALITIS DURING PREGNANCY

WITH A REPORT OF TWO FATAL CASES

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The tremendous campaign to eradicate syphilis conducted in this country during the past decade has frequently been described as America's greatest contribution to preventive medicine. It is now generally conceded that the vanguard of the attack should strike at syphilis in pregnancy. The reason for this is threefold. First, it would result in maternal benefit from the diagnosis and treatment of her condition. Second, the institution of antiluetic therapy early in pregnancy would eliminate syphilis as a factor in premature labor and fetal death. Third, and most important, adequate therapy of every syphilitic prenatal patient would prevent the birth of congenitally luetic babies and, this potent source of syphilis would, with reasonable certainty, soon be stamped out. Laws have been enacted in many states which make a serologic test for syphilis mandatory in the case of every pregnant woman. Louisiana is among the twenty-one states having this legislation.

The advantages derived from the adequate treatment of syphilis in pregnancy are so obvious and the disadvantages so obscure, that it seems possible that the dangers of indiscriminate arsenical therapy in pregnancy have not been stressed sufficiently. Experiences at the New Orleans Charity Hospital support this contention. During a recent sixteen-month period there occurred a total of 21 maternal deaths, two of which were due to acute hemorrhagic encephalitis resulting from arsenical injections for syphilis. Thus antiluetic therapy was responsible for 9.5 per cent of the maternal deaths during the period. It would appear of value, therefore, to report in some detail two fatal cases of hemorrhagic encephalitis resulting from arsenical therapy in pregnancy.

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CASE NO. 1

L. S., a colored woman, 22 years of age, was first seen in the out-patient prenatal clinic at the Charity Hospital in New Orleans on February 2, 1940. The history and examination revealed the patient to be approximately in the twenty-sixth week of gestation. No abnormalities were noted. Routine blood serology drawn at this time was reported to be positive on Wassermann and Kline tests. The tests were repeated and were again found to be positive. A searching history and a careful physical examination failed to bring out any evidence suggestive of congenital or acquired syphilis in the patient.

On February 9, the patient received 0.3 gram of neoarsphenamine intravenously and 0.26 gram of bismuth subsalicylate in oil intramuscularly. The medication was repeated on February 23 and again on March 1. Urinalysis on each occasion was negative. There was no history of reaction following the first two injections.

The patient was brought to the hospital in a semi-comatose condition on March 4, 1940, three days after the last injection of neoarsphenamine. Her relatives stated that shortly after the last injection the patient had developed wheals about the face which itched intensely but disappeared in twenty or thirty minutes. During that night the patient complained of severe headaches and chills. The headache persisted throughout the following day and the patient became highly agitated and irritable. Her condition became progressively worse and on the night of March 3 she became disoriented and required restraint.

On admission the findings were as follows: Blood pressure 118/78; pulse 90; temperature 99°; respirations 18; unequal pupils with right larger than the left, but both reacted to light; bilateral Hoffman; bilateral ankle clonus; and positive Babinski.

Laboratory work at this time revealed the following: Red blood cells 4,130,000; hemoglobin 13.5 grams; white blood cells 11,150; polymorphonuclears 79 per cent; lymphocytes 20 per cent; eosinophils 1 per cent. Blood non-protein nitrogen 25; sugar 133; CO_2 32; uric acid 4; calcium 5.6. The spinal fluid was under normal pressure and was negative for organisms on culture. The cell count was 10, with no red blood cells present. The gold curve was flat and indicative of encephalitis.

The patient soon developed tremors of the extremities and carpal spasm, twitchings of the neck muscles and jerky movements of the head. Treatment consisted of sedatives, spinal taps and intravenous hypertonic glucose solution. The patient became quiet, with decrease of strength of tremors and she began to assume the position of extreme opisthotonus without rigidity of the neck. The

neurologic consultant believed the case to be a toxic encephalomyelitis of arsenical origin.

Death occurred 24 hours following hospital admission and 88 hours after she received her last dose of neoarsphenamine. Shortly before death an antemortem cesarean section was done and a living 4½ pound female infant obtained.

An autopsy was performed: The liver and kidneys were normal. The brain weighed 1220 grams. The dura and pia-arachnoid were intact, and showed no evidence of inflammation. There was no asymmetry of the cerebral hemispheres. The sulci and gyri were of normal width. The basilar arteries were patent and free of atheromatous plaques. The cerebellum and pons were normal. The cut sections revealed many dark red, petechial-like areas in the white matter of both hemispheres. The ventricles were not dilated and contained water-white fluid. The pituitary gland measured 1.8 x 1 x 1 cm. It was grossly normal. Microscopically, there was atrophy and edema of the white and gray matter of the cerebrum. Occasional areas in the white matter contained extravasated red blood cells. The blood vessels were dilated and some contained hyaline thrombi. Around a few blood vessels polymorphonuclear leukocytes and macrophages were noted. A slight granular ependymitis was present. Concentric reddish purple bodies were seen in the choroid plexus. The pons was normal. There was slight fibrosis of the meninges.

CASE NO. 2

Mrs. G. C., a 26 year old white patient registered in the prenatal clinic at the Charity Hospital in New Orleans on May 22, 1941, in the thirtieth week of her third pregnancy. Positive serology was noted on this occasion and again on June 6, after the test had been repeated. Recent syphilitic infection is probable because Wassermann tests were negative on three previous hospital admissions, in 1933, 1938 and 1940. The blood tests of her husband and two children were negative.

The antisyphilitic therapy consisted of intramuscular injections of bismuth subsalicylate, 0.13 gram, on June 12, and again on June 26, 1941. She was then given neoarsphenamine 0.3 gram and bismuth on July 3, and neoarsphenamine 0.45 gram and bismuth on July 10. The blood pressure and urine were normal on the day of each injection. There was no evidence of intolerance following the first three injections.

The patient was admitted to the hospital in active labor on the night of July 13. She was mentally competent but complained bitterly of headache and dizziness which had persisted since the last injection of neoarsphenamine three days previously. Physical examination revealed nothing abnormal. The blood pressure was 112/80; urinalysis negative; no edema. There was no rash. Following a nine hour labor, spontaneous delivery of a normal eight pound infant occurred. During the delivery light anesthesia of nitrous oxide and oxygen was given for a period of about ten minutes. The patient was very drowsy following delivery and appeared mentally confused.

During the following day the patient became stuporous. Blood pressure was 120/90; temperature 100°; pulse 120. Urinalysis was negative. Muscle twitching could be noticed in the extremities but there were no tonic or clonic contractions present. No jaundice was noted. The pupils were unequal with the right dilated. Ophthalmoscopic examination showed no choking of the discs and there were no retinal hemorrhages or exudates. The biceps, triceps and patellar reflexes were exaggerated. The Gordon, Oppenheim and Babinski reflexes were positive. The hemoglobin content was 9 grams; the red blood cells numbered 3,250,000, the white blood cells numbered 5,100. The differential count showed 86 per cent polymorphonuclears, and 14 per cent lymphocytes. Blood total non-protein nitrogen was 27, the CO_2 combining power 31, blood sugar 120, and uric acid 3. The spinal fluid was clear and under normal pressure. The curve was suggestive of encephalitis.

Our therapeutic effort consisted of intravenous hypertonic glucose, repeated spinal taps, epinephrine and oxygen. Intravenous sodium thiosulphate also was used but proved of no value.

Her condition grew progressively worse and she expired about 96 hours after delivery. Shortly before death the patient had a generalized convulsion.

An autopsy was performed. The pathology report is as follows: Liver—some fatty changes, but not arsenical. Kidney—cloudy swelling, toxic changes. Brain—hemorrhagic changes of arsenical encephalitis; extremely marked hemorrhage in the pons.

COMMENTS

These cases show close similarity in many respects. Positive serology was the only complication. In accord with the usual insidious nature of the disease in females, a history suggestive of primary, secondary or tertiary infection could not be elicited. In both instances arsenical therapy was first instituted late in pregnancy and reaction occurred only after several weeks of minimal arsenical therapy. Moreover, the symptomatology, neurologic manifestations, clinical course and lack of response to therapy were identical. Finally, the autopsy reports revealed similar pathologic lesions.

It is of further interest to note the fate of the infants. Both patients were delivered of live babies in whom no evidence of congenital syphilis was found. Whether the infant salvage is the result of the relatively small amount of arsenical therapy we are

not prepared to say. It is our opinion, however, that definite fetal benefits accrue when judiciously graded arsenical therapy is administered even in the event that prenatal syphilis is not recognized until shortly prior to term. If the diagnosis is made after the thirtieth week of gestation we believe that best results are obtained when an arsenical preparation, preferably mapharsen, and bismuth are used concurrently.

Incidentally, recent experiences of the pediatric service of Charity Hospital emphasize that arsenical therapy of congenital syphilis in young children is not without danger. Everhart[1] reports five cases of hemorrhagic encephalitis with fatal termination following the oral administration of stovarsol to children.

DISCUSSION

In a most comprehensive review of the problem Glaser, Imerman and Imerman,[2] in 1935, reported from the literature and from their own experience 158 cases of hemorrhagic encephalitis following intravenous injections of arsphenamine. There was approximately one death due to central nervous system involvement in every 5398 cases treated and in every 28,768 injections. In this series there was a remarkable similarity in the histories and clinical findings of the cases. They found that 40 per cent of the patients were 20 to 30 years of age. One of the striking features brought out in the analysis was the fact that most of the patients suffering from the condition were having their first experience with arsenic and that comparatively little of the drug had been used. In 53 per cent, 0.05 to 1.1 gram was injected before the onset of symptoms while another 30 per cent received from 1.10 to 2.1 grams. Fifty per cent of the patients had received but two doses of arsphenamine before the onset of symptoms. Eighty-five per cent had symptoms within 72 hours after the last injection, while 31 per cent had symptoms within one to 12 hours. Death occurred within three days in 48 per cent, and 80 per cent had convulsions. Although 40 per cent of the patients in this series were females, no mention is made of an associated pregnancy.

Ingraham,[3] in 1939, in a critical analysis of 42 cases of maternal death following antisyphilitic therapy during pregnancy, brought out many interesting facts. Almost two-thirds of the deaths were due to acute hemorrhagic encephalitis. The age of the patient and her parity apparently have little influence on the fatal termination. It is significant, however, that at the onset of therapy the physician was concerned with primary or secondary infection in 38 per cent of cases, while in only 19 per cent was the infection known to be more than four years old. Perhaps the most striking feature of the entire analysis is the revelation that 81 per cent of the fatal treatment reactions were precipitated by three or less arsenical injections.

INCIDENCE

The hazards of antiluetic arsenical therapy in pregnancy are still not settled. A Cooperative Clinical Group[4] recently studied the pooled records of five large syphilis clinics and from this evidence conclude that the pregnant syphilitic woman tolerates arsenical treatment as well, or better than, the non-pregnant individual. Stander[5] states that his experience is similar. Plass and Woods,[6] on the other hand, believe that a pregnant woman probably is more susceptible to the deleterious, as well as the beneficial, effects of modern arsenical therapy. They advise that great care be exercised in giving a first course of antisyphilitic arsenical treatment to a woman with syphilis in the last months of pregnancy. Kuehn and his associates,[7] Ingraham[3] and others,[8] likewise advise extreme caution in the use of arsenicals in pregnancy.

No less than fifty fatal cases of arsenical hemorrhagic encephalitis in pregnancy have been reported in the literature but we are, nevertheless, convinced that this number by no means represents the true incidence of deaths from this condition. Personal communications with the directors of a number of large prenatal syphilis clinics revealed that, without exception, fatalities due to arsenical administration had been observed by all of them. It was interesting

to note, moreover, that in many instances the only deaths reported occurred in pregnancy.

An analysis of the records of the syphilis clinic of the Charity Hospital for the past five years shows that the occurrence of fatal arsenical encephalitis is four times as frequent in the pregnant than in the nonpregnant woman of the same age group. The fatal reaction rate per 1,000 injections of neoarsphenamine is 0.76 for the former and 0.19 for the latter.

ETIOLOGY

There is a definite lack of agreement as to the cause of hemorrhagic encephalitis following arsenical administration. Individual idiosyncrasy or sensitivity, toxicity of the drugs, errors in its administration, excessive dosage, the syphilitic infection, chronic arterial disease, liver or adrenal insufficiency, disturbance in the colloidal equilibrium of the blood, direct toxic action on the brain capillaries have all been suggested as etiologic factors. In pregnancy, as Eastman[9] has pointed out, the placenta is a storage center for arsenic, which is gradually set free in the blood over a prolonged period, thus increasing the amount of arsenic present in the blood stream. This, together with the fact that pregnancy presumably produces a certain amount of capillary alteration, may account for its more frequent occurrence in pregnancy, since Ireland[10] believes that the lesions are doubtless produced by capillary vascular injury or thrombosis. It is likely that no single factor will explain all cases. However, the delayed metabolism of the arsenic and the accumulation in the body of the toxic products seem the most probable predisposing factors. From this hypersensitivity to arsenic or its metabolites, the patient develops an arsenical reaction when another injection is given. Death following shortly after a single arsenical injection is probably due to atopic drug allergy, while fatalities after one or more injections suggest sensitization (acquired allergy).

PATHOLOGY

The principle pathologic manifestations are observed in the brain but associated

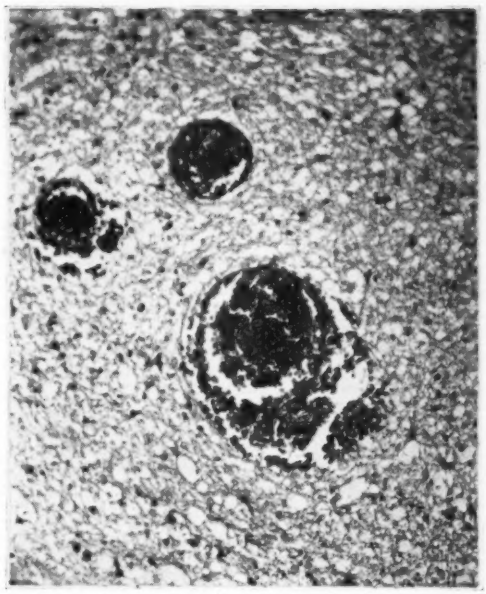

Fig. 1. Section of brain showing perivascular hemorrhage and edema characteristic of hemorrhagic encephalitis (x 200).

cord and meningeal involvement are not infrequently noted. The gross lesions appear as punctate hemorrhages throughout the brain substance. These may coalesce to form large foci and are usually found in the white matter, but occasionally in the gray matter, and in the pons and basal ganglia. Hemorrhage, however, is not an essential part of the picture. Some cases at autopsy show intense hyperemia and edema of the brain without any areas of softening or hemorrhage. It seems possible that edema of the brain occurs first, and in severe cases, is followed by hemorrhage. Alpers,[11] in 1928, gave an extensive description of the brain lesions or "foci." He states that on microscopic examination these foci appear as areas of perivascular necrosis which occasionally show an outer ring of hemorrhage. In the center of the lesion capillary or precapillary vessels are observed, with swollen or destroyed endothelium. In some instances the swelling is so great as completely to obliterate the lumen. The lumen often contains a fibrin clot or hyaline thrombus. Immediately next to the central vessel is an area of necrosis and beyond

that there may be an outer area of hemorrhage. Later, Globus and Ginsburg[12] described two cases in which ring hemorrhages constituted the main cerebral lesions, but recognized that these are not specific for arsenical encephalitis as similar histopathology has also been found in other diseases including epidemic and tuberculous meningitis, malaria and typhus. Because the hemorrhage is mainly perivascular Globus and Ginsburg suggested the name "pericapillary encephalorrhagia" as a more appropriate one than encephalitis.

DIAGNOSIS

The symptomatology and clinical course may vary considerably but the sequence of the appearance of the prominent features is frequently so similar that it constitutes a distinctive clinical entity. The clinical manifestations usually begin with headache and mental confusion, followed by convulsions, coma and death. The deep reflexes are at first hyperactive but soon diminish in strength; Babinski tests are usually positive; and ankle clonus may be elicited. Spinal fluid examination will show a flat colloidal gold curve, suggestive of encephalitis.

The differential diagnosis usually offers little difficulty. The development of serious neurologic manifestations following the injection of an arsenical preparation may warrant a tentative clinical diagnosis of hemorrhagic encephalitis due to arsenic. It must be distinguished from other conditions that may cause convulsions and coma in obstetric patients. These include eclampsia, uremia, hypertensive encephalopathy, and diabetes. And finally, the disease rather than the treatment may be the cause, inasmuch as the symptoms of syphilis of the central nervous system often closely simulate those of arsenical encephalitis.

TREATMENT

Therapy should be one of prevention, as once the condition occurs it is usually fatal. The institution of antiluetic therapy during pregnancy should await positive verification of the diagnosis and should be attended with even more than the usual precautions. A thorough examination is imperative in order to ascertain medical or obstetric complications which might increase the dangers of treatment. Special attention should be placed on the condition of the liver and kidneys because these organs are principally concerned in the metabolism and excretion of arsenic. It is inadvisable to administer arsenical preparations to patients suffering with hyperemesis gravidarum or the serious toxemias of pregnancy.

Before each injection, the patient should be closely interpolated, and if any evidence of intolerance has occurred, arsenicals should be discontinued or continued only with lowered dosage and great precautions. Especially should the judicious use of these drugs be practiced when therapy is started late in pregnancy as the majority of patients who develop this complication do so in the last trimester of pregnancy.

Neoarsphenamine has been the drug most commonly employed in the treatment of syphilitic pregnant women. The newer drug, mapharsen, has received recent acclaim and the reports have been very encouraging. While it is too early to pass final judgment on the merits of the drug, it undoubtedly is safer than neoarsphenamine and apparently gives the unborn child adequate protection. Many authorities recommend the use of mapharsen for antiluetic treatment in the last three months of pregnancy or if reactions occur following the injection of neoarsphenamine. Whenever time permits, it seems advisable to begin the series of treatment by giving a course of six doses of bismuth or other heavy metal before the arsenicals are employed. It is stated that a high carbohydrate, high fat diet is of value in preventing reactions.

Once hemorrhagic encephalitis occurs, therapy is limited to the use of sedatives, hypertonic glucose intravenously, and repeated spinal puncture. Sodium and calcium thiosulphate have proved of no value.

SUMMARY

1. Two cases of acute hemorrhagic encephalitis, with fatal termination, following neoarsphenamine antiluetic therapy during pregnancy, are reported. It is significant

that in a five year period at the New Orleans Charity Hospital the maternal mortality rate of arsenical encephalitis was 0.76 per 1,000 injections, which is four times greater than the frequency of fatal reactions in non-pregnant women of the same age group.

2. The syphilitic infection was apparently of recent origin in one case and of long duration in the other. In both instances arsenical therapy was instituted for the first time late in pregnancy.

3. Small quantities of drug initiated the fatal reactions. A total of 0.9 gram of neoarsphenamine was administered by three injections over a 20 day period in one instance; the other patient received 0.75 gram by two injections in seven days.

4. Evidence of intolerance occurred after the third injection of neoarsphenamine in one patient and after the second injection in the other. The symptom complex began with headache and disorientation, followed by convulsions and muscle spasms, coma and death.

5. Autopsy revealed the pericapillary pathology in the brain found in hemorrhagic encephalitis due to arsenic.

CONCLUSIONS

There is increasing evidence to show that pregnant women are more susceptible to the bad, as well as to the good, effects of arsenical therapy, and furthermore, that fatalities, though rare, are particularly prone to occur when treatment is initiated late in gestation. By no means do we wish to convey the impression, even by implication, that less emphasis should be placed on the modern dictum that every woman should have a serologic test for syphilis in the first trimester of every pregnancy. Neither do we deprecate the value of antepartum antisyphilitic therapy in the prevention of congenital syphilis. The added hazards of arsenical administration during pregnancy should suggest, however, the need for a more constant supervision of the pregnant syphilitic woman who is under treatment, and the great value of exercising unusual precautions in the administration of arsenical preparations during pregnancy.

In an effort to obviate the necessity for intensive antiluetic therapy during the last weeks of the antepartum period, early prenatal registration is urged, so that arsenical treatment may be started when it is least dangerous and when it will do the most good. Even more desirable would be the eradication of infection prior to conception. This objective can best be achieved by competent premarital and preconceptional examinations.

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INDICATIONS AND CONTRAINDICATIONS FOR VERSIONS AND EXTRACTION AND EXTRACTIONS IN BREECH PRESENTATIONS

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By version and extraction is meant an operation which changes the polarity of the fetus with reference to the mother, and its delivery. By extraction is meant the removal of an unmutilated child through the maternal passage.

Before discussing the indications and contraindications it is necessary to state the conditions which should be present before this should be attempted.

1. The cervix must be completely dilated, or an effaced and easily dilatable cer-

vix or it will result in death of the child, and extensive lacerations. The cervix can be manually dilated in special cases or can be incised.

2. In podalic versions the head must present and in breech extractions usually the buttock or some extremity.

3. There must be no disproportion between the passage and passenger: (a) The inlet of the pelvis must be ample. Arrest of the aftercoming head results from contraction of the pelvic inlet. A previous x-ray will prevent this complication; (b) the outlet must be ample. Loss of a child results when the bony outlet is contracted, and the need for more room in the posterior sagittal results in extensive lacerations, especially in the pelvic floor; (c) the soft parts of the outlet must be dilated; either manually dilate the pelvic floor and vaginal tract or a deep medio-lateral episiotomy should be done.

4. The urinary bladder and rectum must be emptied.

5. The membranes should not be ruptured if possible, except by introduced hand or where rupture occurred recently.

6. There should be an accurate diagnosis as to presentation and position of the child.

7. Slow delivery.

8. The uterus must not be too firmly retracted down on the fetus.

9. The patient's buttocks should be at the end of the table and the legs supported by a leg support or assistants, as throughout most of the extraction downward traction is made in the pelvic outlet.

10. Suprapubic pressure is necessary before any traction is made, and the assistant should be taught how to make pressure on the fundus of the uterus.

11. A good anesthetist and a deep anesthesia are necessary.

12. The child should be alive.

13. Asepsis is necessary. Hence all such patients should preferably be handled in hospitals.

INDICATIONS FOR PODALIC VERSION

1. Fetal dystocia from faulty attitude.

2. Fetal dystocia from faulty presentation: (a) This includes malpresentation of the fetal body, such as transverse or oblique presentations; (b) face or brow presentations.

3. Fetal dystocia from faulty position; right or left occiput posterior positions in which the head will not rotate and engage, being movable above the superior strait.

4. Placenta praevia marginalis late in labor and lateral or partial placenta praevia. Braxton Hicks manoeuvre is used often in such cases.

5. Prolapsed cord; this procedure is not carried out when this condition has been neglected and becomes impacted or when the condition is associated with a contracted pelvis.

6. Prolapse of one or both arms, or shoulder presentation with hand presenting in vulva.

7. Accidental hemorrhage with dilated cervix.

8. Threatened maternal death in eclampsia, otherwise never indicated in this condition.

9. In nearly all cases where high forceps were used on the unengaged head.

10. Uterine inertia.

11. Premature detachment of the placenta.

12. In all varieties of head presentations in which it is believed that delivery can be more safely and more rapidly accomplished after version. In parietal presentations when the head remains asynclitic so that the parietal bone presents even after sufficient labor has been allowed to give the patient opportunity to square the head in the normal pelvis axis, a persistently abnormal drive must be suspected.

13. Where the child presents some deformity, sometimes more facilitated by version.

14. Transverse arrest in certain androied (male) pelvis types.

15. Cord around baby's neck (short cord).

INDICATIONS FOR BREECH EXTRACTIONS

1. In primary breech presentation, due to maternal reasons. In insufficiencies of the forces of labor, or an insufficiency in

relation to the need for immediate delivery because of patient's general condition.

2. Dystocia due to retraction or tonic contraction of the uterus late in the second stage. The only way uterine resistance can be overcome is by means of deep surgical anesthesia.

3. Twin pregnancies with both heads presenting with one head resting upon the other, or when any presenting part of either child will not engage.

4. Occasional breech presentation when the right or left buttocks rests upon the symphysis pubis arresting progress.

5. Maternal indications: (a) Time indicator; two and one-half hours in the second stage without progress; (b) emergency indicator; any maternal emergency which is accompanied with more risk than is a breech extraction.

6. Fetal indication, (fetal embarrassment); (a) Before the birth of the umbilicus if fetal heart goes below 100, or above 160, or irregular; (b) after the birth of the umbilicus any change in the rate or irregularity of the pulsations in the umbilical cord.

Generally speaking the operations are indicated in all women requiring prompt delivery when the head is floating at the superior strait, or is slightly engaged provided there is no great disproportion between its size and that of the pelvis. It is usually safer and a more satisfactory procedure than the application of high forceps.

The widest field of usefulness is in accouchement force after the cervix has been completely dilated by means of the hand or by bags; especially in antepartum hemorrhage, version and extraction constitute the readiest and most conservative method of delivery.

CONTRAINDICATIONS

1. A markedly contracted pelvis or funnel pelvis: (a) When the available pelvis space is so contracted that it is incompatible with delivery of a living child; (b) in serious or absolute disproportion between fetal and maternal measurements or diameters as in a flat and rachitic pelvis, or due to large sized baby.

2. Oversized hydrocephalus fetus.

3. In cases where labor progresses normally.

4. Tetanically contracted uterus or Bandyl ring: (a) In tonically contracted uterus or one in tetanic spasm it leads to ruptured uterus; (b) hour-glass contraction (high contracting ring); (c) when the uterus is dry and its walls are firmly applied to the body of the child; (d) after prolonged labor with long ruptured membranes and a thin lower uterine segment; (e) Bandyl ring contracted around the neck or shoulder of the child so firmly that it cannot be ironed out under the administration of morphine and surgical anesthesia; (f) never to be undertaken after the administration of pituitrin until the patient has been given a sufficient amount of morphine to secure at least moderate rest and uterine relaxation; (g) there is a difference of opinion if the presenting part has passed the external os and is firmly engaged in the pelvic canal that undue force is required to displace it.

5. It is never done in placenta praevia centralis.

6. Imperfectly dilated os, except in certain cases of placenta praevia where Braxton Hicks is employed or in cases where the cervix can be dilated manually when the cervix is at least four fingers dilated, under which circumstance the tearing will be minimal. If delivery is imperative in the face of a lesser degree of dilatation, the cervix should be treated by incision rather than by the manual method in order to avoid tearing and the resulting inadequacy of dilation. There must be no uterine obstacle to rapid advance which extraction demands. The cervix must be completely effaced and the os dilated, also the vagina and perineum ironed out.

7. A dead fetus.

THE COMPLICATIONS

The complications that may result from podalic versions and breech extractions are divided into those which may occur in the mother and those which may occur in the fetus.

Maternal Complications: (1) Ruptured soft parts; (2) hemorrhage; (3) rupture of

uterus; (4) uterine inertia after delivery; (5) sepsis.

Fetal Complications: (1) Asphyxia from compression of cord; (2) fracture of bone, separation of symphysis, and dislocations; (3) injury of nerves, leading to paralysis; (4) head injuries; (5) blood extravasations.

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MODERN CONCEPTS IN THE TREATMENT OF BRONCHIAL ASTHMA*

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From the standpoint of etiology it may be said that there are two types of bronchial asthma, the extrinsic and intrinsic. This is a well known classification with which we are all familiar. The extrinsic variety is the type that is known to be caused by the sensitization of the patient to various causative factors which can be identified in a diagnostic study. This is the most frequently seen type of asthma, and is the one in which the best results have been obtained from treatment. It may be caused by pollen, foods, and various other contact and inhalant factors. This condition requires most careful and exhaustive diagnostic measures so that we may find out the various antigens which may play a part. It is usually found that this type of asthma is caused by several substances, for instance what appears to be a simple case of ragweed pollinosis may turn out to have a number of aggravating factors. The patient may be sensitive to several foods and also dog hair and wool. These other factors may not be enough by themselves to cause asthma outside the ragweed season, but if they are not handled properly, hyposensitization to ragweed may not be of any great help. While pollen asthma shows a seasonal variation, asthma due to other antigens may appear at any time of the year. Diagnostic measures, to be complete, are rather complicated and include skin testing by the scratch and endermal methods. Doubtful reactions are checked by the ophthalmic and nasal patency tests. Food reactions may be checked by the leukopenic index and the keeping of a food diary. This diagnostic survey should be done by an allergist.

To sum it all up the treatment of this condition depends primarily on the avoidance of causative factors, and hyposensitization when indicated.

Intrinsic asthma comprises the group of patients in whom we are unable definitely to attribute the asthma to an external cause. The incidence is about 20 per cent of all cases of asthma. Its identification can only be made by exclusion, after no relief occurs when environmental factors have been controlled. It is claimed by some to be caused by infection or by endocrine disturbances. Other investigators contend that it is really another manifestation of atopy, and that the exciting agents have not been found. It is often seen in middle life, may be associated with bacterial infection and tends to follow a progressive course which causes severe attacks of asthma and may often eventually terminate fatally.

It is believed that some mechanism, possibly unknown, sets off the disturbance which releases the so called H substance which initiates the attack. To summarize briefly the present concept of allergy, it is believed that the antigen combines with the fixed antibody, damaging the tissue cells. This releases histamine, or the H substance, which stimulates the parasympathetic nerves to secrete acetylcholine. Then this overstimulates the parasympathetic

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system, which causes muscles to contract or dilate according to their location, increases the permeability of capillaries and causes various other responses. It is known also that psychic and emotional factors are extremely important in this mechanism. The psychology of each individual must be carefully studied, and mental disturbances must be overcome when possible.

By the above mentioned histamine release the phenomena of physical allergy may be explained. For instance, in a cold sensitive individual there is a release of histamine which initiates the allergic symptoms.

The study of bacterial allergy has been very interesting. Skin reactions to bacteria may be either manifested by an immediate wheal or by a delayed reaction. In a recent publication, Bronfenbrenner states that the mechanism of bacterial allergy is identical with the allergy to simple proteins. He says that the differences in skin reactions are not fundamental in nature and may be due largely to the complexity of the composition, physical state, and relatively low immunogenic properties of bacterial antigens. It is believed that some cases of intrinsic asthma are due to bacterial allergy. The treatment may be largely symptomatic, and will be discussed later.

TREATMENT

In treating asthmatic conditions the diagnosis must be established. The study of allergy is very closely allied to internal medicine. Conditions which must be differentiated are: bronchiogenic carcinoma, foreign body, cardiac asthma, bronchial or lung infections, mediastinal pressure from tracheobronchial lymphadenopathy, or substernal thyroid. Breath sounds, when there is an obstruction, show a different pitch, and there may be a stridor. Other aids in diagnosis are the history, eosinophil count, roentgen ray, sputum examination, and bronchoscopy. Cardiac asthma may present a very similar picture to bronchial asthma, and is often seen in elderly hypertensive individuals. Other evidences of cardiovascular pathology may be found. The electrocardiogram will give aid in arriving at the correct diagnosis. Incidentally, I may say that when emphysema is present, the determination of the size of the heart may be very difficult.

The common pathologic changes in the bronchi consist of thickening and hyalinization of the basement membrane, hypertrophied bronchial musculature, eosinophilic infiltration, and degeneration of the mucous glands. Surrounding emphysema is present. It is generally believed that the symptoms of asthma are due not alone to muscular contraction, but are also due to edema of the mucosa, and the obstruction caused by plugs of mucous. The determination of the vital capacity is an aid in determining the extent of the process, and subsequent improvement may be determined by this method.

Symptomatic therapy depends on the type and degree of asthma that is present. In a recent article, Keeney gave an excellent classification of these various types: (1) patients with mild bronchial asthma; (2) those with moderately severe bronchial asthma; (3) severe bronchial asthma. The last group is further subdivided into: (a) patients with acute severe bronchial asthma; (b) those with intractable asthma (status asthmaticus); (c) severe chronic bronchial asthma.

The first group is usually relieved by ephedrine sulphate 3/8 grain. This may be repeated at 30 minute intervals, if relief is not immediate. I do not like to give more than three doses in succession. Once relief is obtained, the ephedrine may be repeated every four hours. There are other synthetic preparations which have an action similar to ephedrine. Due to the fact that ephedrine frequently causes nervousness, tachycardia, and insomnia, I like to give a sedative at the same time. This may be phenobarbital, amytal, or nembutal. Ephedrine may also cause palpitation, gastrointestinal disturbances, and urinary suppression in old men.

Proprietary preparations containing ephedrine, aminophyllin or theophylline with ethylenediamine, and a sedative are widely used. Theophylline sodium acetate, in one such combination, may be had in a plain

capsule and an enteric coated tablet. This is especially useful in cases of nocturnal asthma, and the patient may take both on retiring. By the time the plain capsule is wearing off, the constituents of the enteric coated tablet are just being absorbed. It must be remembered that rest and sleep are important factors in treating asthma.

These oral preparations are best given early, as the patient who has a well advanced attack may not respond as well.

Patients who do not respond to the above medications, the ones who have moderately severe asthma, may be helped by inhalations of 1-100 solution of epinephrine hydrochloride. This is administered by the patient breathing in a fine spray which is produced by a special nebulizer. It must be remembered that systemic manifestations of epinephrine may occur due to absorption from the bronchial mucosa. It is claimed that too frequent or prolonged use of this method may cause dryness and even ulceration of the mucosa. However it is a very helpful remedy when properly used. Abramson finds that this method is improved when the vapor pressure is low. He attains this by using 10 to 50 per cent glycerine in the preparation. Richards, Barach, and Cromwell found that the vaporized medication was more effective when combined with oxygen and blown into the nose under slight pressure.

The more severe type of asthma will require injections of epinephrine hydrochloride. The requirements of each individual are different. Many men give 0.3 to 0.5 c. c. and repeat every 15 minutes for three or four doses until relief is obtained. Sterling advocated smaller doses, such as 0.1 to 0.15 c. c. repeated at intervals of 30 minutes for two or three doses, and points out that some individuals are hypersusceptible to epinephrine. It may cause extreme nervousness, precordial pain, tachcyardia and in severe cases acute pulmonary edema, cardiac dilatation, and even ventricular fibrillation. The patient who is to obtain relief will attain it usually after a total dose of 0.3 to 0.4 c. c. Massage over the site of administration may aid in absorption. Specimens of epinephrine which have been standing for several months, and have become brown colored lose about 30 per cent of their strength. It may be used with caution in hypertension.

Epinephrine relief persists for a varying period of time and with the idea of prolonging its effects, a solution of epinephrine in peanut oil for intramuscular injection has been widely used. This has been called "slow epinephrine" because of its delayed absorption and prolonged effect. A recent study has shown that its absorption compares favorably with the aqueous preparation, and therefore it is not necessary to give the aqueous solution for quick effect. Very good results have been obtained with this preparation, but some patients have had severe reactions following it. A patient allergic to peanut oil should not receive it. A similar solution of epinephrine in gelatine has also given excellent results, and is now on the market for general use. A sedative should be given to the severe asthmatic patient to give rest and to control the emotional state.

The condition of intractable asthma or status asthmaticus is sometimes very hard to relieve, and sometimes terminates fatally. It is seen in patients who have had repeated severe attacks. In this state the patient does not react to epinephrine, and usual methods are of no avail. Hospitalization is advisable because then the environmental factors at home may be avoided. Aminophyllin 0.24 gram in 10 to 20 c. c. of saline is given intravenously. Some physicians prefer a dose of 0.48 gram, but most patients will be relieved by the smaller dose. This medication has been found to be effective in about 75 per cent of cases.

Different investigators have found that aminophyllin causes dilatation of the constricted bronchioles. It must be given slowly, or it may cause some reaction as nausea, vomiting, burning in the eyes, a feeling of heat, a sense of constriction in the chest, and at times convulsions and coma. It may sclerose the veins or cause excrutiating pain should it be injected into the tissues. Alexander recommends giving it in an infusion

of 500 c. c. of 10 per cent glucose. The dose may be repeated in four to six hours. He also recommends the rectal administration of paraldehyde. After relief by aminophyllin, patients who have been "epinephrine fast" may again respond to this medication.

Keeney recommends the use of hypertonic glucose, saline, or sucrose solution intravenously in order to reduce mucosal edema, and adds epinephrine to the solution. He uses 100 c. c. of 50 per cent sucrose given very slowly at the rate of 5 or 10 c. c. a minute, in the belief that sucrose remains longer in the blood. However, Anderson and Bethea have shown that damage to the lining cells of the convoluted tubules may be thus caused, and advise against its use in patients with renal damage. These changes may or may not be of significance in the normal case.

As the asthma improves, the constriction lessens and the mucous plugs in the bronchi are coughed up by the patient.

Anoxemia and carbon dioxide retention are seen in status asthmaticus, and therefore it may be necessary to give oxygen. As helium is one-seventh as heavy as nitrogen, a mixture of 80 per cent helium and 20 per cent oxygen is usually used, although other proportions may be used at times. This lighter gas can more easily pass through the bronchi. This is given with the B. L. B. mask or preferably in a special tent. The administration of helium and oxygen causes a decrease in the negative intrapleural pressure. An increased negative pressure causes an exudation of edematous fluid.

Holinger, Bosch and Poncher state that oxygen is an antiexpectorant as it dries the secretions and increases their viscosity. They recommend using 5 or 10 per cent carbon dioxide with oxygen, and adding water vapor to the mixture in order to decrease the viscosity of the sputum.

Ziegler has recently done some interesting work on the intravenous administration of oxygen, but states that it is ineffective when there is a marked diminution in the capacity of the vascular bed of the lungs, as is seen in emphysema.

A mixture of ether and olive oil may be given by rectum if there is no improvement from the above measures. This may cause relaxation, and at least gives temporary relief from emotional stress. Keeney digitalizes these patients, but Vaughan advises against it unless the heart is enlarged.

If everything else fails, 0.1 c. c. or more of 1-10,000 epinephrine in saline may be tried slowly by intravenous injection. This is dangerous and may cause auricular dilatation and pulmonary edema. In status asthmaticus the pulse rate is usually elevated to 130 or more and intravenous epinephrine is then contraindicated.

Cyclopropane anesthesia has been used with success. Avertin anesthesia is not widely used.

General supportive measures must not be neglected. Nourishment, usually of a liquid type, must be given, and attention given to bowel elimination. The patient will probably be helped by giving sweet drinks which contain assimilable sugars.

Other general measures which are used in the treatment of asthma, will now be considered.

Morphine is a parasympathetic stimulant, and depresses the respiratory center, and if used at all must be used only in very small doses in selected cases. It has been used to allay apprehension and to quiet the patient at certain times. I do not advocate it in status asthmaticus, or at any time, because of the great number of deaths which have definitely been caused by this drug. It is far too dangerous to use in the treatment of an attack of asthma. Atropine is of no great help, but Myerson advises its synergistic use with epinephrine. Asthma powders which are widely used often give temporary relief. They are made up of stramonium leaves and potassium nitrate. Sensitization has occurred to these products.

The administration of potassium salts has been shown by various investigators also to be useless. Calcium is a time honored drug which is no longer used in the treatment of asthma. As iodides are readily excreted through the bronchial wall, their administration has a tendency to help liquefy the

thick tenacious mucous in the lumen of the bronchi. Toxic manifestations must be watched for. Recent work tends to show that a high intake of sodium may aggravate asthmatic attacks.

Many workers have attempted to secure refractoriness to allergic manifestations by the injections of small amounts of histamine. Quite a few have reported good results. The use of histaminase, which is a ferment which destroys histamine, has not given notable results in the treatment of asthma.

An interesting article has just been published in which the investigators attacked the problem from a new angle. They studied the effect of a synthesis of histamine to a protein through an azo linkage. This produced a hapten substance whose antibodies may neutralize any excess of histamine released after an antigen antibody reaction. The results are not definite, but further study may be of great interest.

Most allergists have reported better results in the treatment of nasal infections by conservative methods. Many nasal polyps will disappear after proper treatment. Local treatment should help drainage and relief of congestion. Later if there is no improvement, more radical nasal surgery may be done. Of course if there is a definite mechanical abnormality it should be corrected at once. The eradication of foci of infection may be of help in a few cases.

Non-specific therapy which includes autogenous and stock catarrhal vaccines, sterile milk injections, or intravenous typhoid vaccine, may be of help. Sensitization to milk should be ruled out before treatment with this substance.

Hyde has recently reported good results with rather mild fever therapy, using a humidified external heating type of cabinet. He reports improvements in 75 per cent of his cases. His results seem to be better than when longer and higher fevers are used.

King has recently recommended the intravenous injection of strontium bromide with good results.

A few years ago there was a great wave of enthusiasm for the use of iodized oil, which as you know is instilled down the trachea into the bronchi. The routine use of this preparation has been condemned by many writers. Seibold saw three definite bronchopneumonias in the same hospital at the same time which were due to the use of iodized oil. It may cause spontaneous pneumothorax, chronic infection, iodism, or lipoid pneumonia. The oil sometimes remains in the lung for several years, and acting as a foreign body causes tissue reaction.

The contraindications, according to Moore are: Active pulmonary tuberculosis, reduced vital capacity of the lung, acute pulmonary infection, foreign bodies, during attacks of bronchial asthma, cardiac weakness, late bronchial malignancy, sensitivity to iodine, sensitivity to poppy seed oil, and extremes of life.

In his article Seibold stated that after 1937 there was a 500 per cent increased mortality in asthmatic deaths in a hospital, the greatest increase being in the group that received the oil. In my opinion it may be used only once or twice for diagnostic purposes, but should not be used for therapy.

There is a possibility that a disturbance of the body magnesium may play a part in asthma, as Haury has recently shown that 50 per cent of patients having an attack of bronchial asthma had a low blood serum magnesium. He gave magnesium sulphate intravenously and intramuscularly to two patients, with good results. This is still in the experimental stage, and is not recommended for general use.

Various types of surgery have been done on the autonomic nervous system. I understand that there have been some good results, but there have also been many failures. Nerve section may be useless because of the belief that there may be a local reflex arc in the bronchi which may initiate muscular spasm. There is a connection between the sphenopalatine ganglion and the vagus nerve, and it has been found that injection of this ganglion may be of help.

With regard to the use of the sulfonamide drugs, a recent study by Unger, showed that only four out of 23 patients were improved. I feel that these drugs should be used only in the presence of definite acute infection, as evidenced by fever and leukocytosis.

Roentgen therapy has been advocated at various times, and recent reports from the Mayo Clinic have been encouraging.

SUMMARY

A discussion of the treatment of bronchial asthma has been presented.

While over 80 per cent of patients obtain relief from specific therapy, there are many who must be treated symptomatically.

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DISCUSSION

Dr. W. A. Lurie (New Orleans): I was interested in Dr. Ogden's paper because of the fact that in recent years I have had a series of chronic asthmatic patients who have been treated along the lines which he indicated Dr. Hyde instituted; that is modified hyperpyrexia. This has been very successful in my hands because I believe the underlying principle of this asthmatic condition has been attacked primarily. First the spasm, the bronchial spasm, and the blocking of the bronchus and air cells within the lungs is immediately relieved because of the heat development within the lung tissue itself. The spasm is quickly relieved. It has been my experience that patients who have been unable to rest in the reclining position fall asleep while under treatment and relief is not only temporary or while under treatment but lasts a number of days before another treatment is given. In addition to the effect brought on by the heat, it has been my practice to try to relieve whatever

pressure, internal pressure, may have resulted from what I am willing to term residual air within the lung, and within the air cells. Very often these patients have a mucus plug which prevents the escape of air of which the oxygen has been entirely eliminated. Throwing off of this air is impossible unless some additional effort is given. This additional effort is given by means of increasing pressure on the chest wall so as to force out this air and also the plugs that have been formed within the bronchi. In this instance I use the sine wave with very good effect. Recently in addition to these two modalities which have been effectual, I have undertaken to ionize epinephrine and I find the effect of epinephrine is quite lasting when used by means of ionization. Patients have reported the effect lasting for from four to six hours without any of the symptoms of rapid absorption and other deleterious effects of epinephrine or adrenal chloride injection. I believe the future of the treatment and relief of these asthmatic conditions lies in a further study along the lines suggested by Dr. Hyde.

Dr. N. F. Thiberge (New Orleans): In hearing Dr. Ogden's paper I was reminded of a large volume when reviewed in the Reader's Digest where the reader is furnished in a few pages the salient and important points of a history and the reader enabled to carry with him all the important facts impressed upon his memory. I think the doctor ought to be complimented on the clear resumé of the treatment given. He has presented an article that will prove of use to those interested in the treatment of asthmatic symptoms which can be used as reference.

There are several points I want to emphasize in the treatment of allergic asthma. The first thing that comes to my mind reminds me of advice that Dr. Menage gave me. He said many patients with scabies came to him that had been maintained by the enthusiastic treatment of the general practitioner. Strong antiseptics had been used; after becoming effective they were needlessly continued to control the irritation that had been caused by them. The treatment Dr. Menage instituted was to withdraw the antiseptic. The same thing holds good in the treatment of allergy. You may have removed the principal allergy; by adding and persisting in the antigen you may be maintaining the symptoms. The point brought out in the paper is that in treating allergy, attention should not be fixed only on the principal antigen but many secondary allergies come into play and long after the principal allergy is controlled these secondary elements come to the surface and may become very serious.

When an allergen attacks a susceptible cell anywhere in the allergic, histamine (or a histamine-like body) is liberated and circulates freely in the blood stream until it finds a shock organ; then follow symptoms due to this invasion. Adrenaline neutralizes the H body in the blood stream; allergens in ascending doses fortify the shock organs to the invading H bodies. Small doses of histamine logically should be able to accomplish the same result.

In reference to the question of lipiodol, I do not agree completely with Dr. Ogden as to its value in the therapeutics of asthma. I think it has its place. It can be used too promiscuously or enthusiastically and in too concentrated solution and does harm. It is especially indicated where the bronchial mucous membrane is extremely sensitive and passage of oil with antiseptic reduces that irritability and the spasm is overcome. That is one indication. The second place where lipiodol has its place is in those cases where there is bronchiectasis. As soon as I inject the lipiodol if I hear a good deal of gurgling, bronchial rales, and the patient, without effort, brings up a good deal of mucus and pus, I know lipiodol has been indicated and I know this patient will be relieved immediately. Very often I have used lipiodol in acute asthma with a great deal of success. I think in these cases an extreme irritability of the mucous membrane was the principal agent.

Dr. Ogden (in closing): With regard to the first statement about ionization of epinephrine, Dr. Abramson of New York recently did some very interesting work in which he introduced epinephrine phosphate into the skin by electrophoresis. By this method of administration, it is believed to be pharmacologically active over long periods of time. The epinephrine is slowly absorbed from the depots in the skin. Constitutional reactions are rare, and excellent results were obtained in the treatment of severe asthma. Other workers are using electrophoresis in various ways. I recently visited Dr. Vaughan's clinic and while there observed skin testing in children in which the allergens were applied to the skin by electrophoresis. Much work has been done with the application of histamine by electrophoresis.

I do not know if I understood Dr. Thiberge's statement correctly, about desensitization. My idea is that we try to prevent the union of antigen with fixed antibody before the H-substance is produced, not after. Desensitization at that time, after the H-substance is produced, would not alter the reaction in progress, although it might help preventing the further progress of the allergic reaction.

With regard to iodized oil and acute asthma, we must remember that the lumen is reduced in size: by constriction, by mucous plugs, and by edema, and if such an oily foreign substance is instilled, it may aggravate the obstruction, in some smaller bronchi. Quoting Seibold: "Spontaneous pneumothorax, chronic infection, iodism, lipoid pneumonia and death are untoward reactions that cannot be passed over lightly, and are definite reasons enough to condemn the routine use of this procedure."

FORTIFYING WHITE BREAD WITH VITAMINS AND MINERALS*

SIDNEY BLISS, PH.D.†
NEW ORLEANS

The Committee on Food and Nutrition of the National Research Council was organized at the Government's request to provide scientific guidance for a national nutrition campaign.

Such a campaign would obviously start with a consideration of such articles of food as are most commonly used and which furnish a large share of the calories in the diet. Wheat flour and the foods prepared from it were considered first because they furnish more calories in the average diet than any other type of food.

The preference of consumers for a whiter and more highly milled flour has resulted in the complete removal of the outer coatings of the wheat kernel before being made into flour. This has, accidentally of course, deprived flour of those constituents which occur chiefly in these outer layers of the wheat kernel.

The importance of the whole matter lies in the fact that the vitamins and minerals present in whole wheat occur almost exclusively in these outer coatings of the wheat kernel. As a result of milling processes used to produce a white flour, therefore, wheat is deprived of its total vitamin content and there is an almost complete removal of the minerals it originally contained.

There is good reason to suppose that the poor physical condition of a large part of our population is due, in part at least, to an inadequate intake of these vitamins and minerals.

It has seemed in the national interest, therefore, that attempts be made to furnish an automatic supply of these dietary essentials. That they are essentials cannot be doubted when the overwhelming evidence is considered. Russell M. Wilder,[1] Chairman of the Committee on Food and Nutrition of the National Research Council and member of the Nutrition Advisory Committee to the Coordinator of Health, Welfare and Related Defense Activities, has the following to say of his own experimental observations: "The degree of disability induced by withdrawing thiamine from the otherwise adequate diets of these persons was impressive. Fatigue appeared, interest in daily tasks was lost, accompanied by discouragement, depression and irritability. Appetite was lost. Multiple neurasthenic complaints were heard. The heart sounds became faint, the blood pressure fell, the pulse was irritable, and as the duration of the restriction was prolonged abnormalities in the action of the heart and the mobility of the stomach and intestine could be recorded with special apparatus. Likewise changes were noted in the chemical constituents of the blood, especially in the concentration in the blood of by-products in the oxidation or utilization of sugar in the body. These abnormalities were all quickly corrected when more thiamine was given."

The proved therapeutic value of nicotinic acid in pellagra is too well known to require further comment, and evidence is continually appearing to demonstrate the therapeutic usefulness of other members of the vitamin B complex.

The vitamins that are lost when whole wheat is processed into white flour are: (a) all members of the vitamin B complex (more than eight known substances plus some unidentified ones), and (b) vitamin E. The minerals lost are chiefly iron, calcium and phosphorus.

It would seem that if the milling of wheat to produce white flour removes important dietary essentials when the outer coatings and the endosperm are removed, the solution is a simple one, make whole wheat bread from whole wheat flour from the unaltered grain. It is this simple. The difficulty is to get people to see it.

Those who have studied the problem are unanimous in the opinion that the substitution of whole wheat bread for white bread would do much toward the improvement

*Read before the Orleans Parish Medical Society, December 8, 1941.

†From the Department of Biochemistry, Tulane University.

of the American dietary. One investigator[2] has suggested that educational efforts might be aided by an economic incentive. The one he suggests is to reduce the price of whole wheat bread and add the difference to the cost of white bread. If white bread becomes more expensive, while whole wheat bread drops in price, many people might care to try whole wheat bread, and in most cases that is all that is needed because many people find whole wheat bread so agreeable to the taste that they prefer it to white bread, whatever the nutritive values may be.

The general preference for bread made from white flour and the desire of people to use it more generally raises the question as to what can be done to improve its obvious deficiencies. The ideal arrangement would be to add the vitamin E, all members of the vitamin B complex, and iron, calcium and phosphorus in the amounts lost in milling, and have the bread made from such an enriched white flour look and taste like the nutritively-deficient white flour we naturally prefer. The national program of enriching white flour addressed itself to this problem.

The vitamins and minerals agreed upon as supplements to white flour are thiamine (vitamin B_1), nicotinic acid and iron. These supply two of the more than eight members of the vitamin B complex and one of the three mineral deficiencies. It is agreed further that, at the option of the millers and bakers, riboflavin, calcium and phosphorus may be added if the commercial firms care to add one or more of them. This allows for, but does not compel, the addition of a third member of the vitamin B complex, and allows for the addition of the other two mineral elements known to be lacking in white flour.

A word of caution is in order if one is to think of the many implications of an experiment conducted upon such a large scale —because it is an experiment. Evidence is accumulating to substantiate the view that the vitamin requirements are not only absolute but relative. It seems that, as has been shown to be the case for minerals and hormones, vitamins, too, must be balanced in amount against each other. Experimental animals that have been getting along on very low absolute amounts of vitamins just above the level where frank vitamin deficiencies appear, have been given supplements of one vitamin with the result that a deficiency condition due to lack of one of the others appears. It is this danger that exists in arbitrary and incomplete supplementing of low vitamin and low mineral diets.

It seems that every possible educational effort should be made to get people to use whole wheat bread in place of white bread. For those who cannot be reached, the enriching of white bread is the next best effort, with a careful watch being kept for any harmful effects of incomplete supplementation of low vitamin and low mineral diets.

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THE ANNUAL MEETING

The sixty-third annual meeting of the Louisiana State Medical Society will be called to order on Tuesday morning, April 28, with appropriate ceremony. The House of Delegates will convene on the day previous.

This year the State Society's Committee on Scientific Business has made some rather progressive changes in the arrangement of the program which should enhance interest in the meetings and which should add to their value. The program will provide for the Wednesday afternoon session at the Roosevelt Hotel to be given over largely to the five guest speakers who will be in attendance and who will deliver addresses. The meeting will continue until Thursday midday instead of closing Wednesday evening, as in the past.

The various section chairmen have been able to provide an excellent group of speakers for the members of the State Society. As a matter of fact the number of men who have asked to be put on the program and who have something well worth while to present to the Society is greater than it ever has been in the past. It might be appropriate to mention the five out of town speakers. They include Dr. J. A. Bargen, of the Mayo Clinic, whose investigations on colitis have won him an enviable reputation, who will speak on "The Use of Sulfonamide Derivatives in the Digestive Tract." Dr. Bargen will be the guest of the Section on Gastroenterology. The surgical and dermatologic group have invited Dr. A. B. Loveman of Louisville, one of the best known dermatologists in the South who will speak on that most intriguing subject "Some Cutaneous Manifestations of Systemic Disorders." The medical and therapeutic section has invited Dr. Frederick Baskett of Texarkana, who will bring up to date for the listener the modern treatment of diabetes. This same section has also asked Dr. Charles T. Stone of Galveston, Professor of Medicine at the University of Texas, who will speak on a subject always of interest to the doctors, namely "The Future of the Coronary Thrombosis Patient." The Section on Gynecology and Obstetrics has invited Dr. Ralph A. Reis of Chicago who will speak on the important subject of "Causes and Treatment of Spontaneous Abortion."

In addition to the excellent scientific program the usual entertainments will be provided for the visiting ladies and for the convocation as a whole; a dinner dance will be held on Wednesday evening.

Another variation from the usual proce-

dure will be to hold an open meeting on Tuesday morning. On Tuesday evening Dr. King Rand, President, will read his address, and the medal will be presented to him. The annual orator, Mr. Usher, one of the outstanding scholars of New Orleans and head of the Tulane-Howard Library, will deliver his oration on Wednesday evening. The induction into office of the new president will take place Thursday morning in the House of Delegates.

In every respect this meeting promises to be one of the best ever held by the State Society, whether it be considered from the scientific or from the social point of view. The activities of war, the fact that many of the men are busily occupied in defense activities might at first glance suggest that the attendance will be small. Judging from the experience of other meetings, however, the martial and defense activities seem to stimulate the doctor to acquire greater knowledge so that medical meetings on the whole have been very much better attended than in the past. Certainly it behooves the physician at this particular moment to keep up to date on scientific facts and scientific innovations. Furthermore, with the additional hours that the doctor is putting in with all his numerous activities it is due him to have a few days' rest and recreation mingled with scientific opportunities.

ACCELERATED MEDICAL COURSES

One of the very important measures in national defense has been the actions of the Army and Navy to make it possible to keep medical students in their courses until they have completed their training. The necessity of a continuing supply of physicians for future medical officers is so obvious that it hardly needs to be stressed. However, early in the negotiations to obtain this desideratum considerable objection was raised by selective service which felt that there could be no group deferments according to the strict letter of the law. Through the combined action of certain bodies the American Medical Association, the Council on National Defense, the Association of American Medical Colleges and other interested groups, General Hershey and his staff were made to realize the importance of continuing students in the medical school and suggested to the draft boards that this would be a wise step. That the thousands of draft boards throughout the country have agreed is shown by the fact that of some 20,000 odd medical students in the country only two were drafted in so far as is known.

In order to cooperate in every way with the program for defense, medical schools throughout the country have now adopted a policy of accelerating the curriculum so it will be possible for the students to graduate within a period of three years and in many instances classes will be admitted every nine months. In this way the flow of younger doctors to the services will not only be stepped up but actually more men will graduate than in the past in a given time. Acceleration of the courses will be made possible by the doing away with vacations and prolonged holidays so that the courses can be finished in three calendar years. The Federation of State Medical Boards in the United States have cooperated most wholeheartedly in this program and in the instance of an occasional state which requires four years of residence in the medical school, measures will be taken to change or modify the existing law so that the men who graduate in three years may practice in the affected state when they complete their Army service. The Council on Medical Education and Hospitals of the American Medical Association has approved of this accelerating of the medical curriculum. The only request they make in the medical school is that the high standards of medical education will be maintained without deterioration in the quality of instruction. The medical schools are preparing to do this so that the young man who graduates in three years will obtain a training comparable to that given in the past to the men who graduated in four years. Of course there will be some difficulties in doing this. Many of the younger medical teachers are already in the service and more will follow. However, by calling

on the older men to give more time and by the sacrifice of all holidays it is believed that an excellent education can still be given to the prospective doctor.

It might be pointed out that in order to make impossible drafting of medical students, the Army is commissioning all medical students, and college men who have been accepted as students to enter the Freshman class next year as 2nd Lieutenants in the Medical Administrative Corps Reserve, or as Ensigns H. V. (P.) U. S. Navy. It is not obligatory for the medical student to apply for a commission in the Reserve of the two services but if a man is in good physical condition unless he does so he will jeopardize his chances of obtaining a medical education as he may be drafted. Because of the essentiality of a year's training as an intern in a hospital, these men will not be called until they have completed one year of internship.

In conjunction with these schemes to assure a continuous stream of young doctors entering the services of the armed forces it should be pointed out that it has been the medical profession which has gotten behind the movement, pushed it and accomplished it. The medical and dental professions are practically the only professional groups who have assigned to them the procurement of members of the profession and who have more or less complete professional control. This is an honor and a dignity which shows that the General Staff appreciates and realizes what physicians can and will do. It is decidedly up to our profession to see that the trust that has been placed in us is maintained.

PROBLEMS OF WOUND INFECTION

Miles,* Professor of Bacteriology at University College Hospital Medical School of London, writes from the viewpoint of the bacteriologist in his consideration of wound infections produced under war conditions. He states that in the past the surgeon has often felt that the bacteriologist is not needed in a consideration of war wounds but it is well known now that the bacteriologist has become dominant in the study of the control of wound infections.

The bacteriologist at first is faced with freshly inflicted wounds. In these wounds may be bacteria from the skin, alimentary tract, clothes, and common dirt. From these wounds will come a large variety of different types of organisms. After the patient is received in the hospital, very often the bacterial flora changes considerably and strange to say such bacteria are often much more disabling in their after effects than are those which were introduced at the time of the infliction of the wound. Because of this fact most punctilious care should be taken in the subsequent treatment of wound infections. In order to prove this point Miles quotes an experiment, carried out in a neurosurgical ward, where at times the rate of infection rose as high as 30 per cent. Fifteen per cent of these wounds were infected in the hospitals. The ordinary careful forceps dressing technic was used but in spite of this, *Strep. pyogenes* spread from patient to patient. The technic was then carefully revised, masking was rigidly insisted on and the incidence of secondary ward infection dropped to a remarkable degree.

The author discussed also methods of treatment, stating that there are antitoxins and a number of antibacterial chemotherapeutic agents, natural and synthetic, to combat the organisms that enter wounds. Of the natural antibacterial substances, such as Dubos in this country has written much about, experience is not sufficient to state that they will be of value in the treatment of war injuries. On the other hand, the synthetic chemotherapeutic agents have been extensively tried and have proved their value, both prophylactically and therapeutically. The sulfonamides are inhibited to a certain extent by organic matter but even in the presence of pus their local application materially diminishes the number of streptococci, staphylococci and

*Miles, A. A.: Some problems of wound infection, The Lancet, 2:507, 1941.

spore-bearing anaerobes of wounds. Miles states positively that there is every justification for their early employment in treatment of wounds because even if they do not destroy bacteria they at least prevent their multiplication. In the treatment of gas gangrene the indications are not quite as definite. Sulfonamides have been tested only occasionally in man, and in animals, for the most part unsuccessfully.

Local therapy is particularly efficacious because the maximum concentration of the drug can be obtained in the exact vicinity of the growing organisms. Chemoprophylaxis has also been shown to be more successful than chemotherapy. The different sulfonamide preparations are discussed. Sulfathiazole and sulfapyridine are probably better than sulfanilamide when *Cl. welchii* organisms are present. With *Cl. septique*, sulfathiazole is most efficacious and is outstanding with *Cl. oedematiens*. Miles points out that for historical reasons sulfanilamide is thought to be the best of the sulfonamides in the treatment of streptococcic infections, sulfapyridine for pneumococcic and sulfathiazole for staphylococcic. However, the latter sulfonamide preparation is effective against all types of cocci and appears very much the best drug for the gas gangrene trio of organisms. Sulfathiazole is particularly beneficial because it is moderately soluble. It goes into solution slowly but in sufficiently effective concentration, whereas sulfanilamide is probably too soluble and sulfapyridine is too insoluble. It is necessary to obtain a maximal concentration of the drug through precise application of the powder to the seat of infection.

Miles discusses also antitoxin and sulfonamide action. A combination of these two in gas gangrene is more effective than either one alone. It is apparently his contention that in the choice of prophylactic chemical agents against gas gangrene sulfathiazole is best, "attacking most of the species that contaminate wounds; antitoxin is species-specific only. Moreover, the suppression of the other contaminants by sulfonamides removes elements which, if left to proliferate, might kill tissues and provide a nidus for the germination of the gas gangrene bacillus." From this very brief review of a relatively short paper by a distinguished bacteriologist, it might well be judged that sulfathiazole is a sulfonamide preparation of choice to place in open wounds, whether obtained in war or under civilian conditions. Apparently antitoxin is a better prophylactic agent against gas gangrene than is sulfathiazole.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

TOURO INFIRMARY
New Orleans

The regular monthy meeting of the Medical Staff was held on March 11 at 8 p. m. The first presentation on the program for the evening was a clinico-pathologic conference led by Dr. Harvey Colvin. Dr. Michael DeBakey gave a clinical talk on "The Protection of the Operative Field with an Impermeable Adhesive Skin Coating—Vinylite Resin." The concluding feature of the program was a colored film exhibited by Dr. Dean Echols illustrating "The Grasp Reflex Produced by Brain Tumor."

TOURO INFIRMARY
New Orleans

The regular meeting of the Medical Staff was held on Wednesday, February 11 at 8 p. m. The following scientific presentations were made: Dr. Harvey Colvin, "Clinico-Pathologic Conference"; Dr. Sidney Copland, "Surgical Management of Cases of Iodine-Fast Hyperthyroidism."

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS—APRIL

April 1—Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m.
Mercy Hospital Staff, 8 p. m.

April 2—Thursday—Clinico-pathologic Conference, Touro Infirmary, 11:45 a. m. to 12:15 p. m.

April 6—Monday—Orleans Parish Medical Society, Board of Directors, 8 p. m.

April 7—Tuesday—Eye, Ear, Nose and Throat Staff, 8 p. m.

April 8—Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.

April 9—Thursday—New Orleans Hospital Council.

April 13—Monday—Orleans Parish Medical Society, Scientific Meeting, 8 p. m.

April 15—Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.

April 16—Thursday—Clinico-pathologic Conference, Touro Infirmary, 11:45 a. m. to 12:15 p. m.

April 17—Friday—I. C. R. R. Hospital Staff, 12:30 p. m.
New Orleans Hospital and Dispensary for Women and Children Staff, 8 p. m.

April 20—Monday—Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.

April 21—Tuesday—Charity Hospital Medical Staff, 8 p. m.

April 22—Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.
French Hospital Staff, 8 p. m.
Catholic Physicians' Guild, 8 p. m.

April 23—Thursday—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
DePaul Sanitarium Staff, 8 p. m.

April 24—Friday—L. S. U. Faculty Club, 8 p. m.

April 28—Tuesday—Baptist Hospital Staff, 8 p. m.

April 29—Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.

April 30—Thursday—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

TRANSACTIONS OF THE ORLEANS PARISH MEDICAL SOCIETY

During the month of March the Society held one regular scientific meeting and one joint meeting with the New Orleans Graduate Medical Assembly. The programs were as follows:

REGULAR SCIENTIFIC MEETING

Nutrition in Civilian Defense—Dr. Oscar Bethea.

Physicians in Civilian Defense—Dr. Val Fuchs.

Enrollment in the Armed Forces of the United States—Dr. Robert Strong.

JOINT MEETING

The Place of Medicine in the Country Today—Dr. Frank H. Lahey, Boston, Mass.

Remarks on Management of Heart Disease and Toxemia in Pregnancy—Dr. Samuel A. Cosgrove, Jersey City, N. J.

NEWS ITEMS

Dr. Urban Maes was recently elected to honorary membership in the Circle, honor scholastic society of the Louisiana State University.

Dr. Thomas Benton Sellers presented a paper on Obstetrical Emergencies at a recent meeting of the Sixth District Medical Society at Hammond.

Dr. Walter J. Otis was elected president of the New Orleans Society for Neurology and Psychiatry at a meeting of this organization on January 22 at Arnaud's Restaurant. Other officers elected were Dr. C. P. May, secretary-treasurer; Drs. H. R. Unsworth, T. A. Watters and G. F. Roeling, members of the executive committee. At this meeting Dr. Martha MacDonald presented two cases of neuroses in childhood.

Dr. Wm. H. Gillentine has recently been certified by the American Board of Internal Medicine, and elected a member of the American College of Physicians.

Dr. Frank L. Loria was recently elected a member of the Board of Directors of the local chapter of the Travelers Aid Society.

Dr. J. H. Musser gave the Leo Loeb Lecture at Washington University of St. Louis, on the evening of March 23.

EDWIN L. ZANDER, M. D., Sec.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

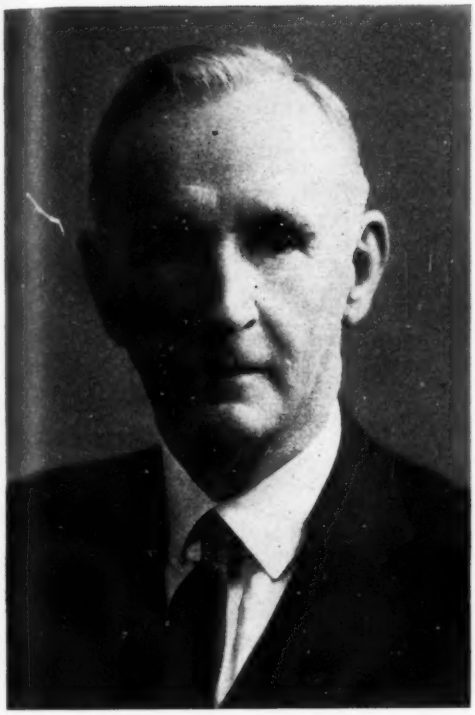
Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

DR. KING RAND

The president of the Louisiana State Medical Society was born in Atlanta, Texas, February 3, 1888. Following his training in preparatory school he took academic work at Washington and Lee University and then entered the Tulane Medical School from which he graduated in 1913. In preparation for his life career, Dr. Rand did extensive postgraduate work before engaging in the practice of medicine. He worked for two years in pathology with the late John A. Lanford. He then became an instructor in medicine at the University of Wisconsin and subsequently took postgraduate courses in the hospitals of New York City.

Dr. Rand was one of the earliest medical men called into active service in the last war. After spending a few months early in the fall of 1917 at Camp Greenleaf, Fort Oglethorpe, as a member of Base Hospital No. 24 (Tulane) he was ordered to France with the Unit where he spent nearly a year. He was practically two years in uniform. He returned to Alexandria where he again started to practice.

Dr. Rand has been active always in the interests of organized medicine. His advice, his good judgment and his willingness to work have advantageously been made use of by the State Medical Society, as well as by his Parish Medical Society. He was for some years secretary and later president of the Rapides Parish Medical Society. In the state organization he was Vice-chairman of the House of Delegates and for the past five years was the Chairman. Now his personality and his abilities as a leader have placed him at the head of organized medicine in the state. In addition to these honors and responsibilities it might be said that Dr. Rand was selected by Governor Jones to be one of the five medical members of the Louisiana State Board of Health. He was placed on the Medical Advisory Board No. 7 of Selective Service and was elected chairman by his associates. He is a member of the staff of Baptist Hospital in Alexandria. President Rand is one of the outstanding medical men in the state but in addition to his scientific and economic success in medicine it might be said that he has been equally fortunate in his married life. He has four children, one of whom graduated from the Medical School of Tulane two years ago and is now in the Army; he has another son who is also in military service.



DR. RICHARD OLIVER SIMMONS

The 1942 meeting of the Louisiana State Medical Society is dedicated to Dr. Richard Oliver Simmons of Alexandria, who for fifty years has been identified with organized medicine, and who one half a century ago treated his first private patient in Rapides Parish, where he has continued to practice to this date. He began life in Pike County, Mississippi, in May, 1868, and graduated from the Louisville Medical College in 1892. These fifty years have witnessed a great transformation in medicine and Dr. Simmons has contributed to the change: from operations in homes on pine tables with chloroform as the usual anesthesia to the ultra modern surgery; from the ravages and terrors of the yellow fever visitations and typhoid epidemics to more progressive preventive medicine. Through such changes for many years he was Health Officer of Rapides Parish. With four other physicians in 1903 he constructed the first hospital in Central Louisiana; which two years later was rebuilt and improved to be sold ultimately to become the original building of the Baptist Hospital, on which staff he still actively serves. He is credited with performing the first appendectomy and the first cesarean section in this part of the state.

Dr. Simmons and his associates formed the Rapides Parish Medical Society, an organization which has had an uninterrupted activity since the early nineties; only one other of these men is living: Dr. J. A. White, Sr., of Alexandria. Dr. Simmons has made organized medicine a major part of his life; he served as President of the Louisiana State Medical Society in 1912; for many years he was Chairman of the Committee on Medical Defense. To attend its annual meetings a pleasurable duty, where in its councils never compromising with principle, fiercely condemning tendencies to state control, he championed a high ethical standard; never a middle-roader, intense in his hatred of those things he could not sustain; never hesitating to state the truth as he saw it; to defend the right and cling to his ideals.

He has long been a Fellow of the American College of Surgeons and the Southeastern Surgical Congress. His professional duties did not keep him from having interest in farming and a love for Walker hounds in a chase in the moonlight over the hills.

A pioneer surgeon, a good physician, a hard worker, ever an organization man, tops as a good fellow: on completing fifty years in medicine, we salute you.

THE ANNUAL ORATOR

Robert J. Usher, who will deliver the annual oration, Wednesday evening, was educated at the University of Wisconsin. He has served in library work at the University of Wisconsin and in the library of the University of California and for a number of years was reference librarian at The John Crerer Library in Chicago, one of the foremost scientific libraries in America. In 1927 he became librarian of the Howard Memorial Library, New Orleans, and since 1938 has been librarian at Tulane University in which are combined the libraries of Tulane, Newcomb College and the Howard Memorial Library. He has been curator of the New Orleans Academy of Sciences for the past twelve years.

He is a member of the American Association for the Advancement of Science and of various other historical and professional societies.

PROGRAM OF 1942 ANNUAL MEETING

Section on Medicine and Therapeutics

Dr. J. P. Sanders, Shreveport, Chairman

1. The Increasing Incidence and Complications of Chronic Bacillary Dysentery (Lantern Slides)—Dr. Daniel N. Silverman, and Dr. A. V. Friedrichs, New Orleans. To open discussion—Dr. Allan Eustis, New Orleans.

2. Vitamin Deficiency Status in Louisiana (Lantern Slides)—Dr. R. C. Lowe, New Orleans. To open discussion—Dr. Rhett McMahon, Baton Rouge.

3. The Future of the Coronary Thrombosis Patient—Dr. Charles T. Stone, Galveston. To open discussion—Dr. M. D. Hargrove, Shreveport.

4. Allergic Diagnostic Procedures (Colored Lantern Slides)—Dr. Vincent J. Derbes, New Orleans.

5. The Rational Management of Bronchiectasis (Lantern Slides)—Dr. Charles R. Gowen, Shreveport. To open discussion—Dr. Julius L. Wilson, New Orleans.

6. The Use of Sulfonamides in Acute Infections—Dr. D. B. Barber, Alexandria. To open discussion—Dr. J. P. Sanders, Shreveport.

7. The Use of the Various Insulins in the Treatment of Diabetes Mellitus—Dr. Roy F. Baskett, Texarkana, Arkansas. To open discussion—Dr. Edgar Hull, New Orleans.

Section on Nervous Diseases

Dr. M. S. Freiman, Pineville, Chairman

1. Experience in Selective Service Work—Dr. T. A. Watters—Dr. Walker Thompson, New Orleans. To open discussion—Dr. Edmund Connely, New Orleans.

2. Medico-legal Relations of Nervous and Mental Disorders—Dr. C. P. May, New Orleans. To open discussion—Dr. Edmund Connely, New Orleans. Followed by Dr. T. A. Watters, New Orleans.

3. Brain Abscess—Dr. Gilbert C. Anderson, New Orleans. To open discussion—Dr. Dean H. Echols, New Orleans. Followed by Dr. Mercer G. Lynch, New Orleans.

Section on Pediatrics

Dr. Charles J. Bloom, New Orleans, Chairman

1. Infant Feeding (Lantern Slides)—Dr. C. A. Stewart, New Orleans.

2. Blood Dyscrasias in the Newborn—Dr. S. G. Wolfe, Shreveport. To open discussion—Dr. W. R. Mathews, Shreveport.

(Program to be presented in conjunction with program of La. State Pediatric Society beginning 3:00 p. m. Monday, April 27).

Section on Public Health and Sanitation

Dr. Joseph S. D'Antoni, New Orleans, Chairman

Symposium—HEALTH PROTECTION OF CIVILIANS IN THE PRESENT WAR—

1. Nutrition—Dr. John H. Musser, New Orleans.

2. Emergency Water Supply and Sewerage Disposal—Mr. John H. O'Neill, New Orleans.

3. Potential Epidemics in Louisiana—Dr. E. C. Faust, New Orleans.

4. Prevention of Communicable Disease Under War Conditions with Special Reference to Immunization—Dr. C. W. McCoy, New Orleans.

5. Provisions for Children—Dr. E. B. Wharton, New Orleans.

Section on Gastro-Enterology

Dr. Gordon McHardy, New Orleans, Chairman

1. The Modern Management of Gastrointestinal Allergy (Lantern Slides)—Dr. Morris Shushan, New Orleans. To open discussion—Dr. A. A. Herold, Shreveport.

2. The Use of Sulfonamide Derivatives in the Digestive Tract (Lantern Slides)—Dr. J. Arnold Bargen, Rochester, Minnesota. To open discussion—Dr. Donovan C. Browne, New Orleans.

Section on Bacteriology and Pathology

Dr. John H. Connell, New Orleans, Chairman

1. Clinico-pathologic Conferences in Non-teaching Private Hospitals (Lantern Slides)—Dr. John S. Couret, New Orleans. To open discussion—Dr. Edwin H. Lawson, New Orleans.

2. Spread and Metastasis in Carcinoma of the Cervix Uteri (Lantern Slides)—Dr. B. Pearson and Dr. Manuel Garcia, New Orleans. To open discussion—Dr. Peter Graffagnino, New Orleans. Followed by Dr. W. D. Beacham, New Orleans.

Section on General Surgery

Dr. Joseph E. Heard, Shreveport, Chairman

1. Clinical Application of Recent Knowledge Concerning Blood Substitutes—Dr. Urban Maes and Dr. Harry A. Davis, New Orleans. To open discussion—Dr. Mims Gage, New Orleans.

2. Carcinoma of the Colon and Rectum—Dr. Samuel A. Romano and Dr. William Trachtenberg, New Orleans. To open discussion—Dr. Maurice Lescale, New Orleans. Followed by Dr. Rawley M. Penick, Jr., New Orleans.

3. The Physiologic Conception of Tissue Resistance in the Surgical Diabetic—Dr. L. S. Charbonnet, Jr. and Dr. George F. Schroeder, New Orleans. To open discussion—Dr. George F. Schroeder, New Orleans. Followed by Dr. Howard R. Mahorner, New Orleans.

4. Some Cutaneous Manifestations of Systemic Disorders (Lantern Slides)—Dr. A. B. Loveman, Louisville, Kentucky. To open discussion—Dr. James K. Howles, New Orleans.

5. War Wounds of the Chest; Fundamentals of Treatment—Dr. Harlon W. Harrison, Shreveport. To open discussion—Dr. Frederick F. Boyce, New Orleans.

6. Ether as the Anesthetic of Choice in Prolonged Operations—Dr. Joseph A. Danna, New Orleans. To open discussion—Dr. John Adriani, New Orleans.

7. Abdomino-thoracic Gunshot Injuries — Dr. Frank L. Loria, New Orleans. To open discussion—Dr. Rudolph Matas, New Orleans. Followed by Dr. Joseph A. Danna, New Orleans. Followed by Dr. C. Grenes Cole, New Orleans.

Section on Gynecology and Obstetrics

Dr. Rhett McMahon, Baton Rouge, Chairman

1. The Use and Abuse of Pituitary Extract in Obstetrics—Dr. E. L. King, New Orleans. To open discussion—Dr. Joseph W. Reddoch, New Orleans. Followed by Dr. C. R. Mays, Shreveport.

2. Protein Malnutrition in Pregnancy—Dr. R. E. Arnell, Dr. D. W. Goldman and Dr. W. F. Guerriero, New Orleans. To open discussion—Dr. Edwin L. Zander, New Orleans. Followed by Dr. Earl Conway Smith, New Orleans.

3. Pool Plasma Bank as Used by the L. S. U. Department of Obstetrics and Gynecology—Dr. B.

J. Lehman and Dr. M. Suter, New Orleans. To open discussion—Dr. Harry A. Davis, New Orleans.

4. Causes and Treatment of Spontaneous Abortion—Dr. Ralph A. Reis, Chicago. To open discussion—Dr. Earl Conway Smith, New Orleans.

Section on Eye, Ear, Nose and Throat

Dr. Noel T. Simmonds, Alexandria, Chairman

1. Sinusitis in Disease of the Lower Respiratory Tract (Lantern Slides)—Dr. Ralph H. Riggs, Shreveport. To open discussion—Dr. Charles R. Gowen, Shreveport. Followed by Dr. F. E. LeJeune, New Orleans.

2. The Importance of Early Diagnosis in Glaucoma—Dr. Henry N. Blum, New Orleans. To open discussion—Dr. W. R. Buffington, New Orleans.

3. Vertigo (Moving picture)—Dr. E. Garland Walls, New Orleans. To open discussion—Dr. Dean H. Echols, New Orleans. Followed by Dr. Philip H. Jones, New Orleans.

4. Carcinoma of the Larynx (Moving picture)—Dr. Francis E. LeJeune, New Orleans. To open discussion—Dr. Mercer G. Lynch, New Orleans.

Section on Orthopedic Surgery

Dr. T. M. Oxford, Shreveport, Chairman

1. Management of Fractures and Dislocations of the Cervical Spine—Dr. Carson R. Reed, Jr., Shreveport. To open discussion—Dr. H. A. Durham, Shreveport.

2. Fractures About the Ankle—Dr. Rufus H. Alldredge, New Orleans. To open discussion—Dr. Guy A. Caldwell, New Orleans.

Section on Urology

Dr. Eugene B. Vickery, New Orleans, Chairman

1. Diagnosis and Treatment of Some Common Urinary Disorders in the Female—Dr. U. S. Hargrove, Baton Rouge. To open discussion—Dr. R. F. Sharp, New Orleans. Followed by Dr. M. H. Foster, Alexandria.

2. Renal Physiology in Hypertension (Lantern Slides)—Dr. Hilaire D. Ogden, Jr., and Dr. Gilbert C. Tomskey, New Orleans. To open discussion—Dr. Paul L. Getzoff, New Orleans.

Section on Radiology

Dr. Ernest C. Samuel, New Orleans, Chairman

1. The X-ray Consultation—Dr. T. I. St. Martin, Houma.

2. Intestinal Obstruction—Dr. M. D. Teitelbaum, New Orleans. To open discussion—Dr. Urban Maes, New Orleans.

3. Radium and Roentgen Therapy in 377 Cases of Carcinoma of the Breast—Dr. Harold G. F. Edwards, Shreveport. To open discussion—Dr. Lucien A. Fortier, New Orleans.

SPECIAL NOTICE

Attention all doctors between 45 and 65 years of age.

To all officers, past presidents, delegates, alternates, and members of the Louisiana State Medical Society. As you know, it is required for all men between the ages of 45 and 65 to register on April 27 with the Selective Service Board. To avoid confliction with your attendance at the House of Delegates of the Louisiana State Medical Society on April 27 in New Orleans, we have information from the Selective Service Headquarters that one may register on April 25 and 26 at their local Selective Service Board Headquarters. It is incumbent upon every doctor within this age group to take advantage of this opportunity in order to be in New Orleans on April 27.

Remember, register on April 25 and 26.

CIVILIAN DEFENSE

During the latter part of February and the first two weeks of March Governor Sam H. Jones, with various members of the Civilian Defense Committee, made a tour of the entire state. This was deemed necessary in order to awaken the people to their responsibility and to the acuteness of the need for civilian defense.

Dr. Rhett McMahon, Emergency Medical Director of Civilian Defense in Louisiana, cooperated in this State program by attending meetings when possible and by having some one represent him on the tour at other times.

A great deal was learned concerning the problems of the various parishes in forming an adequate program for medical civilian defense. One of the great problems realized was the question so often raised as to where the funds were coming from to provide necessary equipment for first aid and casualty stations. On the whole, however, it was most gratifying to find the medical profession thoroughly imbued with realization of their responsibility. In most instances adequate medical set-up for the emergency had already been initiated. Some few parishes are lagging in this work but it is felt that with a more thorough understanding of the urgency of the need steps will be taken to supply adequate medical service.

There is no question about the loyalty of the medical profession through the state. In some of the metropolitan centers the medical program for civilian defense has advanced much further than undertakings by other agencies in this regard. This is a tremendous undertaking by the medical profession, calling for an all-out program. Let us congratulate ourselves on this medical preparedness with the hope that it will never be called into use but if it is we can be assured that the medical professio will be equal to its responsibility. It is the duty and privilege of every doctor in this state to lend his cooperation and assistance, not only to the Committee on Civilian Defense but also to his medical officers.

RESOLUTION OF THE STATE BOARD OF MEDICAL EXAMINERS

The present war emergency has necessitated continuous training of medical students in medical

colleges, making it almost impossible for the Louisiana State Board of Medical Examiners to keep intelligent check on the various hospitals for the intern requirement year.

A resolution was unanimously adopted "That the Board rescind its rule regarding a year's rotating internship in an approved hospital as a requisite for obtaining a certificate to practice medicine, and that copies of this be sent to the American Medical Association, the various State Boards of Medical Examiners, the Louisiana State Medical Society, the Orleans Parish Medical Society, and the Deans of the medical colleges."

FOURTH DISTRICT MEDICAL SOCIETY

The spring meeting of the Fourth District Medical Society was called to order March 10, at 8 p. m. by the vice-president, Dr. W. H. Browning in the amphitheatre of the Charity Hospital following dinner in the Shreveport Charity Hospital dining room.

The following doctors were present: Drs. Bodenheimer, Cassity, Hawkins, Garrett, LeDoux, Atkins, Trifon, Browning, Matthews, Eaddy, Knighton, Pirkle, Kerlin, Brown, Hall, Cook, Matthews, Galloway, Baker, Sentell, McIntyre, Hibbits, Fajour, Gowen, Gray, Riggs, Nichols, Jones, Fraser, Fletcher, Ferguson, Allums, Scott, Weber, Terry, Gilmer, Boaz, Hull, Dickens, Herold, Mays, Eddy, Hendrick, D. Kerlin, Webb, Tatum, Boggs, Stamper, Sanders, and Bender.

It was moved by Dr. Herold and seconded, that the minutes of the previous meeting be dispensed with, and the motion was carried unanimously. Dr. Gowen moved that the Fourth District Medical Society endorse Dr. B. C. Garrett for the 1942 presidency of the Louisiana State Medical Society; Dr. Riggs seconded the motion and it was carried unanimously.

Dr. Sam Kerlin nominated Dr. Browning as delegate from the Fourth District Society to the Louisiana State Society. The motion was seconded by Dr. Bodenheimer and carried unanimously.

Scientific Program

The first speaker of the evening was Dr. Edgar Hull, Professor of Medicine and Director of the Department of Medicine, Louisiana State University Medical School. By the use of a set of unique lantern slides, Dr. Hull gave a comprehensive discussion of "The Diagnosis and the Management of Nephritis." Dr. Hull's presentation was of special interest because of his thorough discussion of the causation and management of edema. His presentation was discussed by Drs. Shavin, Herold, Bodenheimer, and J. M. Gorton.

The second speaker of the evening was Dr. Karl Lavon Dickens, Assistant Professor of Medicine, Louisiana State University. Dr. Dickens gave an interesting discussion on "The Diagnosis and Management of Arthritis." Dr. Dickens' paper was of special interest because he covered the complete subject of arthritis so well in the short period allotted him. His paper was discussed by Drs. Herold, Bodenheimer, and Palmer.

N. J. BENDER, M. D., Sec.

OCHSNER INDUCTED AS PRESIDENT OF SOUTHEASTERN SURGICAL CONGRESS

At the annual meeting of the Southeastern Surgical Congress in Atlanta, March 11, Dr. Alton Ochsner was inducted as president of the organization. Dr. E. H. Henderson of Louisville was made president-elect. Dr. Frederick Waas of Jacksonville was elected vice-president and Dr. B. T. Beasley of Atlanta was re-elected as secretary-general and treasurer. The next meeting will be held in Louisville.

NEWS ITEMS

The Louisiana Merit System Council has made announcement for clerical and stenographical positions in the State Board of Health. Anyone interested in such examinations should communicate with Mr. Jack H. Foster, 631 Main Street, Baton Rouge, Louisiana.

The Office of Civilian Defense announces the publication of the following books: 1. Handbook of First Aid. 2. Protection Against Gas. These books will probably prove of value to the physicians in charge of the medical aspects of medical defense.

At the eighth annual meeting of the Southeastern Section, American Urological Association, held in Chattanooga, March 19-21, 1942, New Orleans was selected as the meeting place for their 1943 sessions.

The urologists from New Orleans attending this meeting were: Doctors H. T. Beacham, R. F. Sharp, W. A. Reed, W. E. Kittredge, H. W. E. Walther and E. G. Vickery.

Under the auspices of the American College of Surgeons, a second series of War Sessions are being held throughout the United States. The New Orleans meeting was held Monday, March 16, down at the Jung Hotel. The session was addressed by representatives of the Office of Civilian Defense and Procurement and Assignment Service of the Office of Defense Health and Welfare Services.

The President of the United States by proclamation has designated the first day of May this year as Child Health Day.

The American Psychiatric Association announces a contest for the design of an emblem for the organization. Prizes amounting to a total of $500 will be awarded. Details for this contest may be

obtained from Mr. Austin Davies, 8 Rockefeller Plaza, New York City.

Passed Assistant Surgeon Robert H. Onstott, who has been assigned to the Health Department, has been ordered to the United States Public Health Service District No. 4, Atlanta, Ga., to act as Liaison Officer in the Fourth Army Corps Area.

Assistant Surgeon Ralph W. McComas has been ordered to Springfield, Mo., for duty.

The regular monthly meeting of the Staff of the Hutchinson Memorial Clinic of the Tulane University held in the Amphitheatre, Wednesday, March 11, was represented by Professor Roy H. Turner and by Professor H. S. Mayerson.

ALPHA OMEGA ALPHA

The annual meeting of the honorary medical society, Alpha Omega Alpha, was held in the Hutchinson Memorial on Friday, February 27. The following members from the Senior class of Tulane Medical School were inducted into the organization: M. M. Ziskind, W. N. Valentine, L. E. Robinson, J. C. Mills, R. A. Carsley, J. W. Wiggins, H. H. Tift, J. H. Simons, V. E. Tedesco, J. V. Schlosser, R. M. Landry, W. C. Robinson.

The address of the evening was delivered by Dr. William B. Porter, Professor and Head of the Department of Medicine, Medical College of Virginia, Richmond, his subject being "The Heart Changes and Physiologic Adjustments in Chronic Anemia."

Dr. W. P. Gardiner was elected president to succeed Dr. E. Z. Browne. Dr. Julius Wilson was elected to take Dr. Gardiner's place, and Dr. J. N. Ane and Dr. Michael DeBakey were re-elected as counsellor and secretary, respectively.

NEW ORLEANS ACADEMY OF SCIENCES

A public meeting of this organization was held March 13 in Dinwiddie Hall of Tulane University. The purpose of the meeting was to discuss military and civilian disease prevention, more particularly as how it would affect the life and welfare of the residents of New Orleans. In line with this objective, the program was made up of three addresses delivered by Professor F. H. Wilson, Department of Zoology, Tulane University, who spoke on "Types and Habits of Rats Associated with Man." Dr. George W. McCoy, Department of Preventive Medicine and Public Health L. S. U. Medical Center, spoke on "Plague and its Control." Dr. C. L. Williams, Medical Director, U. S. Public Health Service, talked on "The Control of Endemic Typhus Fever."

SECOND AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The program for this important gathering at St. Louis, Missouri, April 6-10, 1942, in the interests of American womanhood has been designed to supply needs of the varied groups concerned—the doctor, nurse, hospital administrator, public health worker, and educator. In order to develop closer contacts between these groups, a wide variety of presentations will be provided, including several innovations, three "Obstetric Information, Please" hours, clinical conferences, demonstrations of home deliveries, transfusions, obstetric procedures on the manikin, and opportunity for personal consultations with well-known specialists. There will also be a luncheon meeting, with a discussion of War Problems.

In addition there will be extensive scientific and technical exhibits.

In view of the expected large attendance, hotel reservations should be made in advance. The registation fee of five dollars may be sent to the Headquarters office, 650 Rush Street, Chicago, Ill.

CONFERENCE ON MEDICAL SERVICE PLANS

The first Conference on Medical Service Plans was held in Chicago on February 14, 1942, at the headquarters of the American Medical Association and the Palmer House. A total of sixty-four persons were present, including representatives from operating and proposed medical service plans in seventeen states and officers of state and county medical societies.

Mr. J. D. Laux, of Michigan Medical Service, who was elected Chairman of the Conference, indicated that interest in some form of prepayment for medical services has been moving along three well-defined fronts: (1) group clinic or consumer plans such as the Ross-Loos Clinic or the Transport Workers Medical Plan, of which there are seventeen such plans in operation with a total enrollment of 100,000 persons; (2) employe-employer mutual benefit associations (300 in operation) and the commercial insurance company plans (at least 250) providing cash indemnity benefits totaling $365,000,000 annually; and (3) non-profit medical service plans sponsored by medical societies, of which there are 33 plans in operation in 9 states with an enrollment in excess of 750,000 persons. The non-profit medical society sponsored programs are developing most rapidly and give the best

promise of contributing toward a better distribution of medical service.

The entire day was devoted to consideration of the basic principles and major problems involved in medical service and limited surgical benefit programs sponsored by medical societies. The following are some particularly pertinent points brought out in the discussion:

Contract practice plans limiting service to a small number of physicians can not provide a satisfactory service for an entire community. Nonprofit community-wide or state-wide service plans are the proper type of organization for prepayment of medical services.

The statement that voluntary plans lead to compulsory insurance applies to the chaotic situation created by a multiplicity of lay controlled or commercial plans not to medically sponsored community programs.

In medical society sponsored programs, the contribution of the profession is the offering of services without additional charge to persons in the under-income group. Under a plan providing cash indemnity, the only thing the medical profession furnishes—service protection to the individual—would be taken away.

Experiments in the full coverage type of medical service plan are being undertaken to determine the effect of such plans on the private practice of medicine; how such plans affect the physician-patient relationship; what problems arise in connection with the practice of specialties; the differences between urban, rural, and metropolitan practice; and all general problems relating to medical care.

A differential arrangement for specialists is a problem which one medical service plan treats in the following manner: When a subscriber uses a specialist as his family physician, the specialist receives general practitioner fees for such service. However, in the event the subscriber is referred to a specialist by his family physician for special services, an increased fee is paid. To be eligible for increased fees, the specialist must confine himself strictly to his specialty.

Enrollment based on individual physical examinations does not furnish as good selection as group enrollment.

The desirability of establishing somewhat uniform or model legislation for medical service plans was emphasized.

The question of the extent of joint operations with hospital service plans and the appropriate basis for cooperation lead to the establishment of a committee to meet with a committee from the hospital service plans.

It is of utmost importance to establish a centralized agency for the collection and dissemination of information. R. G. Leland, M. D., Director of the Bureau of Medical Economics of the American Medical Association, outlined a program of coordination through establishment of a glossary of terminology, an organizational outline of the plans, and a composite tabulation of financial and statistical reports.

The Conference concluded with the appointment of a committee to determine the best method of establishment of a permanent organization of medical service plans throughout the country.

A LETTER TO THE PROFESSION

My dear Doctor:

The month of April has been designated by proclamation by President Roosevelt as "Cancer Control Month." During this month an intensive educational campaign will be carried on by radio, newspaper articles, magazine articles and addresses by medical and other individuals interested in cancer, on the prevention and curability of this dread disease.

It is highly possible that you may be called upon by some woman in your location to render assistance in this campaign by making talks to lay groups and it is to be hoped that you will offer your services in this movement.

During the month of April the Women's Field Army, which is directed by the American Society for the Control of Cancer, will put on a campaign of enlistment in an effort to raise funds to continue and further the educational campaign on cancer. Seventy per cent of the amount of money that is received in this State will be spent in such work in Louisiana.

For several years there has been an educational campaign of increasing intensity on cancer prevention and the people have become relatively "cancer conscious" with the result that more and more of them are seeking medical advice and medical attention. We know that the best hope of the cancer sufferer is an early diagnosis and the public is becoming aware of that fact with the result that they are visiting their doctors for a complete physical examination.

In making these examinations it is earnestly requested that where women are concerned, a special examination of the breast and uterus be made as they realize that if such is not done they have not had a complete examination and the fear of cancer has not been relieved. It has been found that a routine examination of healthy women of all ages will frequently reveal early malignancy of the cervix or the mammary gland and it is to be hoped that the patients who come to you for such a study will not leave you with the feeling that they have not been completely examined.

Trusting that you will give your interest and attention to this very important movement, I am,

Yours very truly,

EDWIN H. LAWSON, M. D.,
Chairman
Committee On Cancer

FEDERAL HOSPITALIZATION PROGRAM

The following letter is published as a partial rebuttal to the editorial that appeared in the Journal last month:

Dear Doctor Musser:

Permit me to acknowledge your letter of February 24, advising me of your objections to the "proposed Federal hospitalization program."

In his Budget Message of January 5, 1942, transmitted to Congress on January 7, the President said (in part):

"I recommend an increase in the coverage of old-age and survivors' insurance, addition of permanent and temporary disability payments and hospitalization payments beyond the present benefit programs, and liberalization and expansion of unemployment compensation in a uniform national system. I suggest that collection of additional contributions be started as soon as possible, to be followed 1 year later by the operation of the new benefit plans."

As is required by law, the Social Security Board has been studying methods of providing various ways of strengthening the social insurance system and has given considerable attention to the possibility of providing "hospitalization payments." No specific plan has yet been advanced.

For the purpose of studying the matter together, the Social Security Board has had conferences with representatives of hospital groups and of "Blue Cross" plan administrators, has discussed with them possible plans, and has explored various alternatives with them. Some one may have created an impression that there is a definite plan and that it would have certain broad or vague deleterious consequences for physicians, hospitals or the public. This is unfortunate, misleading and, I think, unfair to those to whom it has been communicated.

I need scarcely assure you that we have no interest in advancing or supporting "half-baked, poorly thought out schemes," in war time any more than in peace time. I would therefore suggest that judgment be suspended until there is opportunity for the President's general recommendation to be considered carefully by appropriate committees of Congress on the basis of a definite plan.

Sincerely yours,

PAUL V. MCNUTT,
Administrator.

BABIES IN AIR RAIDS

Instructions as to the special care of babies in the event of an air raid, based in part on the experience of London and other English cities, were made public today by the American Committee on Maternal Welfare.

In view of the general possibility of air raids on American cities, particularly in the coastal zones, the committee regards it as important that American mothers understand and prepare well in advance for the task of protecting their babies. The committee is composed of the leading medical, public health, nursing and hospital organizations of the country and can thus speak with authority.

Aside from the immediate need of shelter from bomb explosions, the most important fact to keep in mind, the English have learned, is that the mother's mental attitude is baby's best guarantee against air-raids.

"However frightened you may feel," the committee quoted from instructions issued by the British National Baby Welfare Council, "keep outwardly calm and unflurried, so that the child's confidence in your own protectiveness may not be shaken.

"Never speak of the raid in the child's hearing if you can avoid it. Mental impressions are formed very much earlier than most people realize. Many of the problem cases among grownups of the present day owe their condition to their parents having talked continually in the presence of the children about past and future air raids, about their own terror, and the effect of this on the child. The following words are as true today as when they were written thousands of years ago: "'In quietness and confidence shall be your strength.'"

When the raid signal sounds, the first move should be in the direction of the nearest shelter. If there is no shelter, take the baby to the safest room in the house, or to a closet under the stairs or under a table or bed, so that he may be protected from flying debris, which presents the most frequent danger.

Take with you garments enough to keep him warm according to the season, a basket or pillow on which he can lie, a first aid outfit in case of need; a toy to amuse him; his bottle of milk and bottle of water, together with extra diapers and related equipment.

The baby's ears should be blocked with cotton wool to minimize the effects of concussion, leaving plenty outside so that it may be easily withdrawn afterward.

If the raid should come while the baby is away from either house or shelter—for an airing in the park, for instance, find the nearest wall or ditch,

however low, place the baby on the ground beside it, with pillows from the baby carriage or a heavy coat under and over him, and lie down beside him.

The problems of baby and mother in wartime and their safety and well-being under all circumstances, will be discussed by experts from all over the Americas at the second annual Congress on Obstetrics and Gynecology, sponsored by the committee, in St. Louis, April 6 to 10.

HEALTH OF NEW ORLEANS

The Bureau of the Census, U. S. Department of Commerce, has reported for the week ending February 14, there were 170 deaths in the city as contrasted with only 123 the week previous. Of these deaths, 106 occurred in the white population and 64 in the negro. Nineteen of the deaths were in children under one year of age, divided 10 white and nine negro. There was a fairly sharp reduction in the total number of deaths of the city for the week ending February 21 as contrasted with the week previously. There were 101 deaths in the white population and 53 in the negro population for a total of 154. Of the 10 infant deaths the number was divided equally between the two races. The following week closing February 28, there was an increase in the white deaths of eight, and diminution in the colored population of 13. The 109 white deaths and the 40 negro deaths also contain 11 children under one year of age in the first category and five in the second category. There was a sharp drop in the number of deaths in the City of New Orleans for the week which ended March 7. Of the 107 demises in the city, 71 were in the white population, 10 of which were in children under one year of age, and 36 in the negro, and only three infant deaths. So it might be noted that in the three year average in the corresponding week of the year that there should have been expected 171 deaths. This represents a pronounced drop in the mortality instance and rate in the city.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health shows that for the week closing February 14 as usual syphilis led all other reportable diseases with a total of 196 cases listed in the weekly morbidity report. Other diseases occurring in numbers greater than 10 include, 112 cases of measles, 76 of gonorrhea, 51 of pneumonia, 38 of mumps, 25 each of pulmonary tuberculosis and chickenpox, 23 of influenza, and 18 of chancroid. In this week there was discovered a case of poliomyelitis in Bossier Parish. A typhus fever patient was found in Acadia Parish. The total number of reportable deaths is considerably increased by the cases reported from army camps. It should be noted this week that measles was mildly epidemic throughout the State. For the week closing February 21, there were recorded 256 cases of syphilis, 70 of gonorrhea, 53 of measles, 49 of pulmonary tuberculosis, 48 of chickenpox, 27 of pneumonia, 17 of mumps, and 14 of chancroid. Of the rarer diseases, one case of poliomyelitis was reported from Orleans Parish, three cases of typhus fever from Madison Parish, and two cases of undulant fever, one from Lafourche and one from Rapides Parish. For the week which closed February 28, there are found to be 162 cases of syphilis reported, followed in order of frequency by these diseases, 83 of measles, 38 of gonorrhea, 33 of pulmonary tuberculosis, 28 of acute pneumonia, 22 each of mumps and of chickenpox, and 11 of influenza. An additional case of poliomyelitis is reported from Orleans Parish this week, one of typhus fever from Iberville Parish, and one of undulant fever from Vermilion Parish. For the first week in the month of March there were a very large number of venereal cases reported. For instance there were 197 instances of syphilis, 190 of gonorrhea, and 28 of chancroid. The State Epidemiologist has made this notation that "The magnitude of these figures is due to the accumulation of reports from army camps over a period of several weeks before they were transmitted to the Department of Health." They do not represent the number of cases that might have occurred in the civilian population. During this week the mild epidemic of measles apparently continues, 85 cases were reported. Other diseases of considerable frequency include 38 instances of chickenpox, 25 of pneumonia, 17 of mumps, and 15 of pulmonary tuberculosis. There were three cases of meningitis reported this week, and two of poliomyelitis, one from Orleans and one from Webster Parish. Four cases of typhus fever were discovered, two in Orleans, and one each in Allen and St. Mary Parishes.

DR. GEORGE KING LOGAN

One of the most beloved practitioners of medicine in the City of New Orleans died suddenly March 21 while making his professional rounds.

Dr. Logan was born in 1873 and graduated from Tulane University Medical School in 1899. He practiced continuously in the city since that time.

Dr. Logan's life as a physician should be an example to all physicians and more particularly the younger generation of doctors. Thoughtful and kind, he was always a comfort to his sick patients. They loved and trusted him. Quiet and sincere, Dr. Logan knew his limitations and never hesitated to ask for the advice of others if he thought it necessary. He leaves behind him a heritage of work well done and a life well spent.

WOMAN'S AUXILIARY

Louisiana State Medical Society

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THE ANNUAL MEETING HEADQUARTERS ROOSEVELT HOTEL

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Vice-chairmen—Mrs. John T. O'Ferrall and Mrs. Roy B. Harrison.

HONORARY COMMITTEE

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CHAIRMEN OF SUBCOMMITTEES

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Information—Mrs. A. V. Friedrichs and Mrs. Wm. Harris.

Tickets—Mrs. Edwin Socola.

Printing—Mrs. Jules Myron Davidson.

Publicity—Mrs. George Taquino.

Exhibits—Mrs. Willard Wirth.

Transportation—Mrs. J. Phillips Carter.

Luncheon—Mrs. Edgar Burns.

Flowers—Mrs. C. L. Peacock and Mrs. Roy de la Houssaye.

Pages—Mrs. Edmond Souchon.

MONDAY, APRIL 27

1:00 p. m.—Registration—First Floor Lobby—Roosevelt Hotel

TUESDAY, APRIL 28

ROOSEVELT HOTEL

9:00 a. m.—Opening Meeting, Louisiana State Medical Society.....Grand Ballroom

10:00 a. m.—Pre-convention Executive Board Meeting .....Pan-American Room
Mrs. Aynaud F. Hebert, presiding
Invocation—Rabbi Julian B. Feibelman

2:00 p. m.—General Session—Mrs. Aynaud F. Hebert, presiding

Invocation—Rt. Rev. Msgr. Peter M. H. Wynhoven

Address of Welcome—Mrs. Isidore Cohn, New Orleans

Response—Mrs. Cecil O. Lorio, Baton Rouge

In Memoriam—Mrs. James W. Warren, New Orleans

Piano selections—Mrs. Edmond Souchon.

Presentation of flowers—Dona Gayle Browne and Helen Sanders

Benediction—Rev. N. H. Melbert

Reading of Minutes

Reports:—State Officers, State Committees, Parish Presidents, Special Committees

Report of Woman's Auxiliary to S. M. A.—Mrs. William B. Clark, New Orleans

Report of Woman's Auxiliary to A. M. A.—Mrs. Arthur A. Herold, Shreveport

Unfinished Business

Recommendations of Executive Board

New Business

Report of Nominating Committee

Election of Officers

Introduction of New Officers

Announcement by New President

Adjournment

WEDNESDAY, APRIL 29

10:30 a. m.—Post-convention Executive Board Meeting—Pan-American Room, Roosevelt Hotel—Mrs. Clarence B. Erickson, presiding

1:00 p. m.—Luncheon—Orleans Club—In honor of Mrs. Clarence B. Erickson

Toastmistress—Mrs. S. Chaille Jamison

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Corresponding Secretary—Mrs. Willard Wirth.

Treasurer—Mrs. Waldemar R. Metz.

Parliamentarian—Mrs. Lloyd Kuhn.

Historian—Mrs. W. A. Reed.

Publicity Secretary—Mrs. George Taquino.

BOOK REVIEWS

Endocrinology: The Glands and Their Functions: By R. C. Hoskins, Ph.D., M.D. New York, W. W. Norton Co., Inc. Pp. 388. Price $4.00.

This book summarizes in an easily readable manner, for the intelligent lay reader, the medical student, and to a lesser extent, the physician, our current knowledge of the glands of internal secretion. The lay reader will be required to read with a dictionary at hand, for though the book is clearly and simply written, the vocabulary is still technical.

The book is well written and the contents sound, but it will make a more valuable addition to an academic rather than a medical library.

B. Bernard Weinstein, M. D.

Essentials of Endocrinology: By Arthur Grollman, Ph. D., M. D. Philadelphia, J. B. Lippincott Co. 1941. Pp. 480. Price, $6.00.

The author prefaces his book by stating that "clinical endocrinology is frequently befuddled by accepting unproved assumptions as basic facts and building upon the insecure foundations thus established, a maze of fanciful and ill founded conjectures." This is true. It is equally true that clinical endocrinology is "befuddled" by books dealing inadequately with clinical endocrinology. This book contains much valuable data on the embryology, gross microscopic and comparative anatomy, pathology, physiology and pharmacology of the various endocrines. The appended clinical discussions are of decidedly less value. Because so much basic material is well organized and presented, the book is a worthwhile addition to the library of those interested in the subject.

B. Bernard Weinstein, M. D.

Laboratory Manual of Physiological Chemistry: By D. Wright Wilson. 4th ed. Baltimore, Williams & Wilkins Co., 1941. Pp. 298. Price $2.50.

The fourth edition of this 300 page laboratory manual achieves a nice balance between the stand-

ard tests, preparations and quantitative estimations. The material is clearly presented in logical sequence, and should be readily comprehended by the student.

A. O. KASTLER, PH. D.

Diseases of the Thyroid Gland: By Arthur E. Hertzler. New York, Paul B. Hoeber, Inc., 1941. Pl. illus. Pp. 670. Price, $8.50.

This volume is an expression of the personal views of one who has had a tremendous experience in treating diseases of the thyroid gland. It is not a comprehensive study of thyroid disease including views expressed by other authors. The book contains no bibliography and in very few places does the author deign to mention other observers or their opinions. However this does not detract from the value of the book. It is interesting and informative, and it is a relief to read occasionally such medical literature free of references to other opinions and so filled with the author's, no matter how opinionated his ideas may seem. The author's insistence that thyroid disease is one process and that the different types of goiter are merely different stages of the same disease is supported by very suggestive clinical and pathologic evidence. He prefers total thyroidectomy for hyperthyroidism and toxic nodular goiter. Complete thyroidectomy in his experience leaves no untoward residuals and surprisingly enough, no evidence of myxedema. Again one is impressed with his insistence that thyroidectomy for fetal adenoma and nodular goiter should be undertaken as preventive therapy since the normal courses of these diseases result in hyperthyroidism or malignancy.

The book is replete with allegorical facetiousness, often earthy, and containing sometimes more pessimism than humor. It reminds one that the author who wrote this book is the same one who wrote the "Doctor and His Patients," disclosing the Mark Twainish inner pessimism of the genial humorous author who had previously written the best seller, "The Horse and Buggy Doctor."

HOWARD MAHORNER, M. D.

Gastric and Duodenal Ulcers: By Harold Aveery, D. Sc., M. B., MR. R. C. P. London, John Bale and Staples, Ltd., 1941. Pp. 110, illus. Price 7/6 d.

Herewith is presented a somewhat brief but complete discussion of peptic ulceration occurring in the stomach and duodenum.

A prerequisite knowledge of the anatomical and physiological features is followed by discussion of the "inherently predisposed." Therapeutic measures, acceptable and debatable, are offered; ulcer complications are given adequate medical coverage and sufficient surgical consideration. The question of diets is touched upon.

As a library reference in its conciseness, it will stand as a valuable reference to medical students and general practitioners.

GORDON MCHARDY, M. D.

The March of Medicine: New York Academy of Medicine lectures to the laity, 1940. New York, Columbia University Press, 1941. Pp. 154. Price, $2.00.

This one hundred and fifty-four page volume contains the excellent treatises of six of our foremost medical authorities favoring the specialties in which they became famous. The presentation of each subject is an unparalleled example of the individual's desire to have his knowledge of a field of medicine understood by the laity. Abraham Myerson reviews the relationship to inheritance of mental disease and stresses the importance of environment. Perrie Long adequately expounds on the present-day popular chemotherapy. Paul Reznikoff makes hematology understandable. The viruses, so little understood, are developed in an interesting manner by Thomas Rivers. A dramatic presentation of the rise of psychiatry from "Bedlam" is creditable to Richard Hutchings. In his usual masterful manner, Chevalier Jackson talks bronchoscopy.

On the whole, each of these six lectures to the laity exemplifies a manner of presentation edifying to the profession and educational to the laity. Any physician called upon to address the public will do well by himself should he emulate the work of these men.

GORDON MCHARDY, M. D.

Functional Pathology: By Leopold Lichtwitz, M. D. New York, Grune & Stratton, Inc. 1941. Pp. 567. Price, $8.75.

The advance of medicine depends upon the understanding of the mechanisms which produce signs and symptoms. Dr. Lichtwitz, on the basis of wide experience in clinical medicine and laboratory work, has given us the results of his observations and study. He has tried to explain many gaps in our knowledge of disease by means of the hypothalamic-pituitary mechanism. This mechanism controls the vegetative functions of the body. Any disturbance in the hypothalamus and pituitary may therefore be responsible for widespread disturbances throughout the organism. Dr. Lichtwitz supports his theory with much important and interesting evidence which makes this book of value to anyone interested in internal medicine. The book contains many illustrations of important conditions which are not always easily obtainable. The publishers are to be congratulated upon the pleasing make-up of the volume.

JOSEPH ZISKIND, M. D.

Surgical Practice of the Lahey Clinic, Boston, Mass. Philadelphia and London, W. B. Saunders Company, 1941. Pp. 897, 376 illus. Price $10.00.

This volume is made up of selected articles previously published by members of the Lahey Clinic staff, and presents standardized methods of managing problems arising in connection with a variety of surgical diseases. In addition to the section devoted to diagnosis and the surgical technic, there are contributions by the departments of pathology, anesthesia, radiology, and internal medicine. The material is grouped under the following headings: the thyroid gland; the esophagus and lungs; the breast; the stomach, duodenum, and small intestine; the biliary tract; the colon, sigmoid, and rectum; the pelvis; the kidney and prostate gland; the bones and joints; the brain, spinal cord, and nerves; and anesthesia.

The 376 illustrations include artist's drawings, photographs of gross specimens, reduced reproductions of x-ray plates, and photomicrographs. Bibliographies of the various articles are reproduced as originally presented, and there is a complete index to the entire volume.

AMBROSE H. STORCK, M. D.

Clinical Hematology: By Maxwell M. Wintrobe, M. D., Ph. D. Philadelphia, Lea & Febiger, 1942. Pp. 792, illus. pl. Price $10.00.

The progress of hematology has been so rapid that the 792 pages of this volume are crowded, meeting the requirement of a concise thorough presentation. The 176 engravings and the 7 colored plates are the barely necessary illustrations.

Authoritative throughout with excellent chapteric bibliographies, the entire work is well coordinated. The laboratory and the clinical aspects are brought together as a basis for accurate diagnosis. Hematological technic including sedamentation, hematocrit and bone marrow examinations are clarified. Blood metabolism is critically covered. The reader is led to a diagnosis in each instance along the simplest channels. Therapy is outlined, but no detail is omitted as is illustrated in the consideration given to the potencies of allergic reactions to and relative value of various degrees of refinement in liver extracts.

In accomplishing his purpose, presenting a comprehensive, complete and authoritative publication, the author has remembered his other object to avoid complexity and lend understandability to a subject which in its rapid technical growth has seemed to separate itself from the general practice of medicine. In this publication, valuable to student, teacher and practitioner, the author has laid the foundation for many a subsequent edition which I am sure the reception of this volume will call for.

GORDON MCHARDY, M. D.

Food and Beverage Analyses: By Milton A. Bridges, B. S., M. D., F. A. C. P. & Marjorie R. Mattice, A. B., M. S. 2n ed. thoroughly rev. Philadelphia, Lea and Febiger Co., 1942. Pp. 343. Price $4.00.

This second edition of Food and Beverage Analyses presents a complete revision and expansion of a successful first edition. The new data include tables on the acidity of foods, their fiber content, their amounts of available carbohydrates and ionizable iron, and organic acids in fruits and vegetables. The data are concise, the arrangement is logical and the foods and food substances considered are inclusive from Creole gumbo to mince pie.

This attractively prepared manual should form a reliable reference source for such groups as dietitians, physicians and medical students in preparation of almost any form of diet.

RALPH H. HEEREN, M. D.

The Value of Health to a City: Two lectures delivered in 1873 by Max von Pettenkofer: Translated from the German, with an Introduction by Henry E. Sigerist, M. D. Baltimore, The Johns Hopkins Press. 1941. Pp. 51. Price $1.00.

This accurate translation of Pettenkofer's two lectures given in Munich in 1873 in the hope of selling health to that city by an economical approach is reprinted from the Bulletin of the History of Medicine, Vol. X, No. 3, October, 1941, Pp. 473-503 and No. 4, November, 1941, Pp. 593-613. An interesting introduction outlining Pettenkofer's career ably prepares a background for perusal of these lectures. Craftsmanship throughout this brief book is completely satisfactory.

These lectures, classics of medical economics, remind us of their soundness when we realize we are attacking along the same lines today. Health arguments such as Pettenkofer presents should be within easy access to all health administrators and should be included in the training background of every student of Public Health.

RALPH H. HEEREN, M. D.

Rheumatic Fever in New Haven: Edited by John R. Paul, M. D. New York, Milbank Memorial Fund, 1941. Pp. 176. Price $1.00.

The purpose of this book is stated "to see whether the types of epidemiological approach they describe are of value in shedding new light on what seems to be the most basic question in rheumatic fever: namely, what is the nature of this disease?"

In this series of articles, each well presented and summarized, there is an excellent but not voluminous statistical accumulation. The clinical investigation forming the background is a survey of hospital records, university students, comparison of several levels of social strata, both as to housing conditions and nutritional status, racial and familial relationship. The editing is excellent; the

three pages dedicated to the summarization of the previous 167 pages are adequate.

The chief contribution of this work is that it presents a method or study which may be used as an excellent example for the survey of any disease by a municipal public health group.

GORDON MCHARDY, M. D.

The Biological Fundamentals of Radiation Therapy: By Friedrich Ellinger, M. D., with a preface by Maurice Lenz, M. D. New York, Elsevier Publishing Co., Inc., 1941. Pp. 360. Price $5.00.

This book is an English translation of the German edition which was published in 1935. Previous errors have been corrected, obsolete portions have been eliminated and more recent data have been added. The list of pertinent literature has been brought up to April, 1940.

This volume represents a compilation of the literature on the biological reactions to radiation therapy and consists of five parts besides the introduction. The First Part is devoted to the action of roentgen rays and gamma radiation of radium. The effects of these agents on the normal tissues and systems, on normal physiological processes, and on abnormal tissues are considered. One chapter in this section concerns the application of "grenz rays" in therapy.

The Second Part deals with corpuscular rays and includes a paragraph on neutrons. The Third Part is devoted to ultraviolet light and considers the effects of this agent on the various systems. The Fourth Part includes discussions of the actions of visible light and infra-red rays. The last chapter in this section is devoted to the diseases caused by light. General radiation biology and therapy are considered in the fifth and final section.

The bibliography is extensive and includes all important papers in the literature relating to the subject. The illustrations are good. This book should be of interest to the radiotherapist and biologist.

J. N. ANÉ, M. D.

The Doctor Takes A Holiday; An Autobiographical Holiday: By Mary McKibbin-Tarper, M. D. Cedar Rapids, Iowa, Torch Press, 1941. Pp. 349. Price $2.50.

Elaboration of a diary, kept during a recent excursion of this widely traveled woman doctor, resulted in this fairly entertaining and instructive book. It was to have been a pleasure trip but introductions to numerous doctors greatly widened her sphere of interests and caused her to emphasize the medical aspects of her sight-seeing.

Those parts of the book dealing with India and China are especially interesting and the chapter "The Gentle Art of Healing in China" is quite well worth reading. Therein, a current belief, that Chinese physicians are paid to keep their patients well is said to be pure fiction; also that they know little of preventive medicine and are not often consulted except for serious illness. Their zeal is stimulated, however, by the fact that their fees are apt to be larger when their patients recover.

While this is mainly a story of travel, which takes the reader into the midst of the Orient, it also has distinct sociological implications and relates interesting observations of activities and curious customs of the peoples she visited. The savoir faire with which our authoress journeyed alone through the fastnesses speaks well for her sportsmanship and her deep, sincere interest in humanity,

Much of the narrative is freshly told with appealing wit, humor and pathos and it is replete with anecdotes of human interest.

C. P. MAY, M. D.

X-Ray Therapy of Chronic Arthritis: By Karl Goldhamer, M. D. Quincy, Ill., Radiologic Review Pub. Co., 1941. Pp. 129. Price $2.00.

This admitted preliminary report of one hundred patients suffering from a diagnosis of arthritis and treated by irradiation with x-ray, embraces the short period of only twenty-one months for observation. The drawings and radiograms are very supportive of the pathologic factors in arthritis and should be very informative to the specialist in roentgenology. However, the action of the x-rays on an inflamed or arthritic joint, is purely supportive of the reactions which occur in the application of the various forms of heat, light and physiotherapy, so commonly used in the present day handling of this disease. This is considered purely palliative at its best, and in multiple atrophic arthritis would be very difficult of application.

The text is well prepared and one will gain considerable knowledge on the subject of arthritis by reading the same. The findings in these diseased joints and treatment used by x-ray are portrayed with great precision.

P. T. TALBOT, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Company, Philadelphia: A Manual of Pharmacology, by Torald Sollmann, M. D. A Textbook of Surgery, by American Authors, edited by Frederick Christopher, B. S., M. D., F. A. C. S.

J. B. Lippincott Company, Philadelphia: Surgery of the Ambulatory Patient, by L. Kraeer Ferguson, A. B., M. D., F. A. C. S.

Lea & Febiger, Philadelphia: The Principles of Neurological Surgery, by Loyal Davis, M. S., M. D., Ph. D., D. Sc., (Hon.)

Charles C. Thomas, Springfield, Illinois: The Treatment of Burns, by Henry N. Harkins, M. S., M. D., Ph. D., F. A. C. S

Year Book Publishers, Chicago: Pediatric Gynecology, by Goodrich C. Schauffler, M. D., A. B.

Attend your

State Meeting

★

New Orleans, April 27-30, 1942

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A Splendid Program Has Been Provided In Every Respect